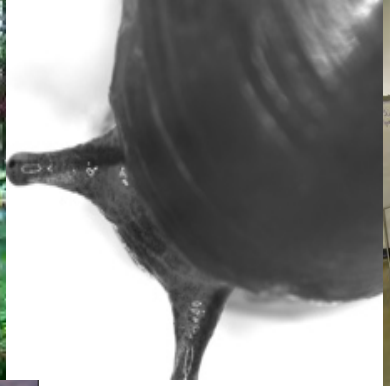



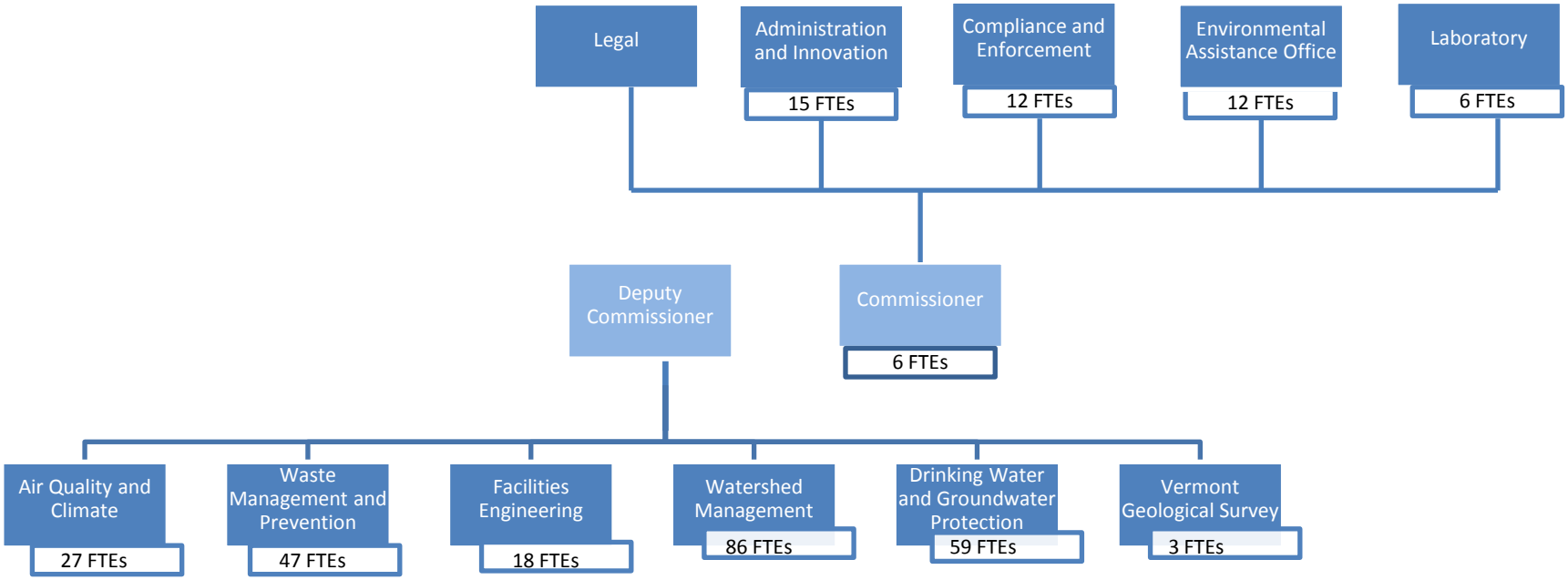

Department of Environmental Conservation

Fiscal Year 2015
Performance Outcomes and Measures



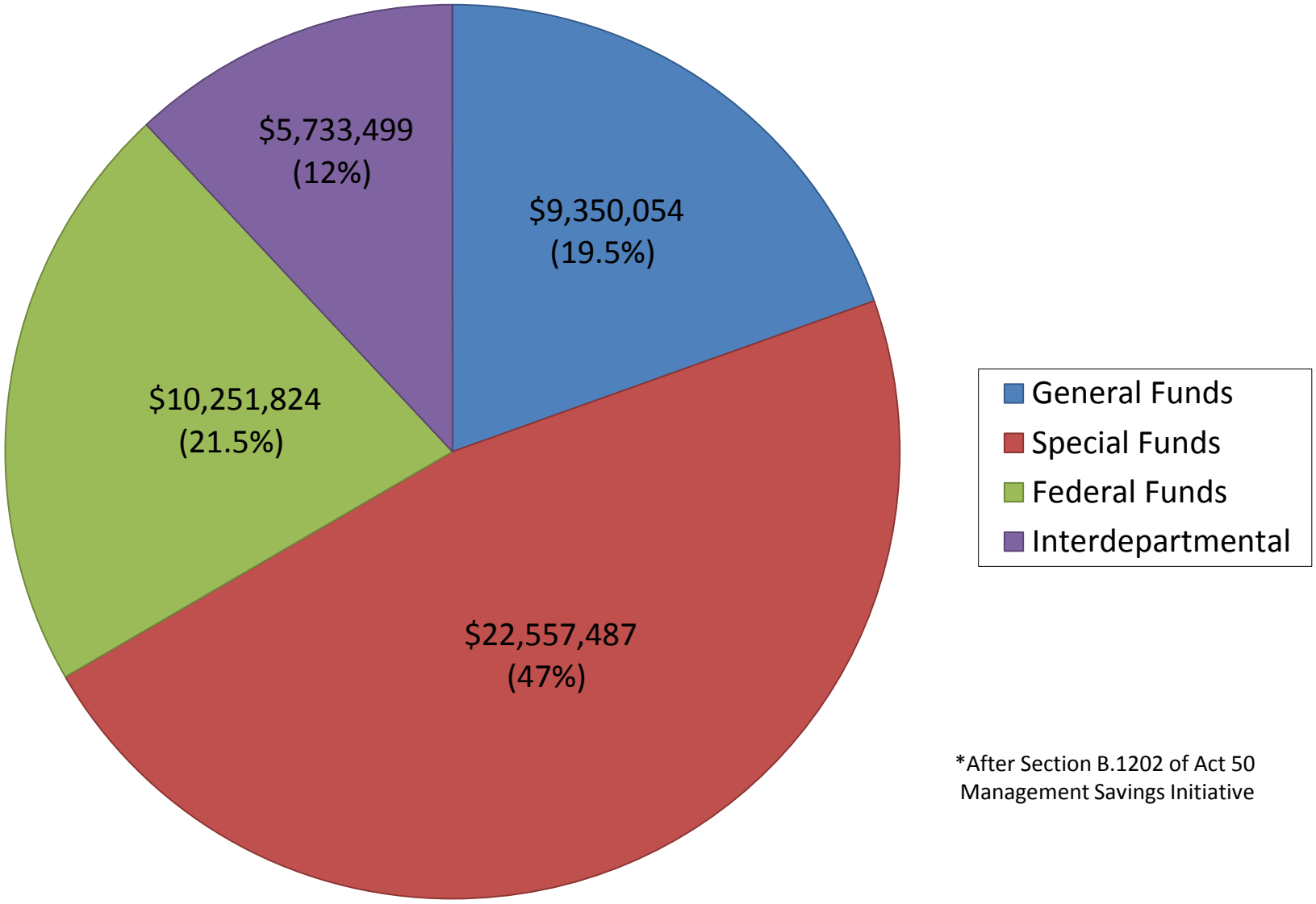



Department of Environmental Conservation



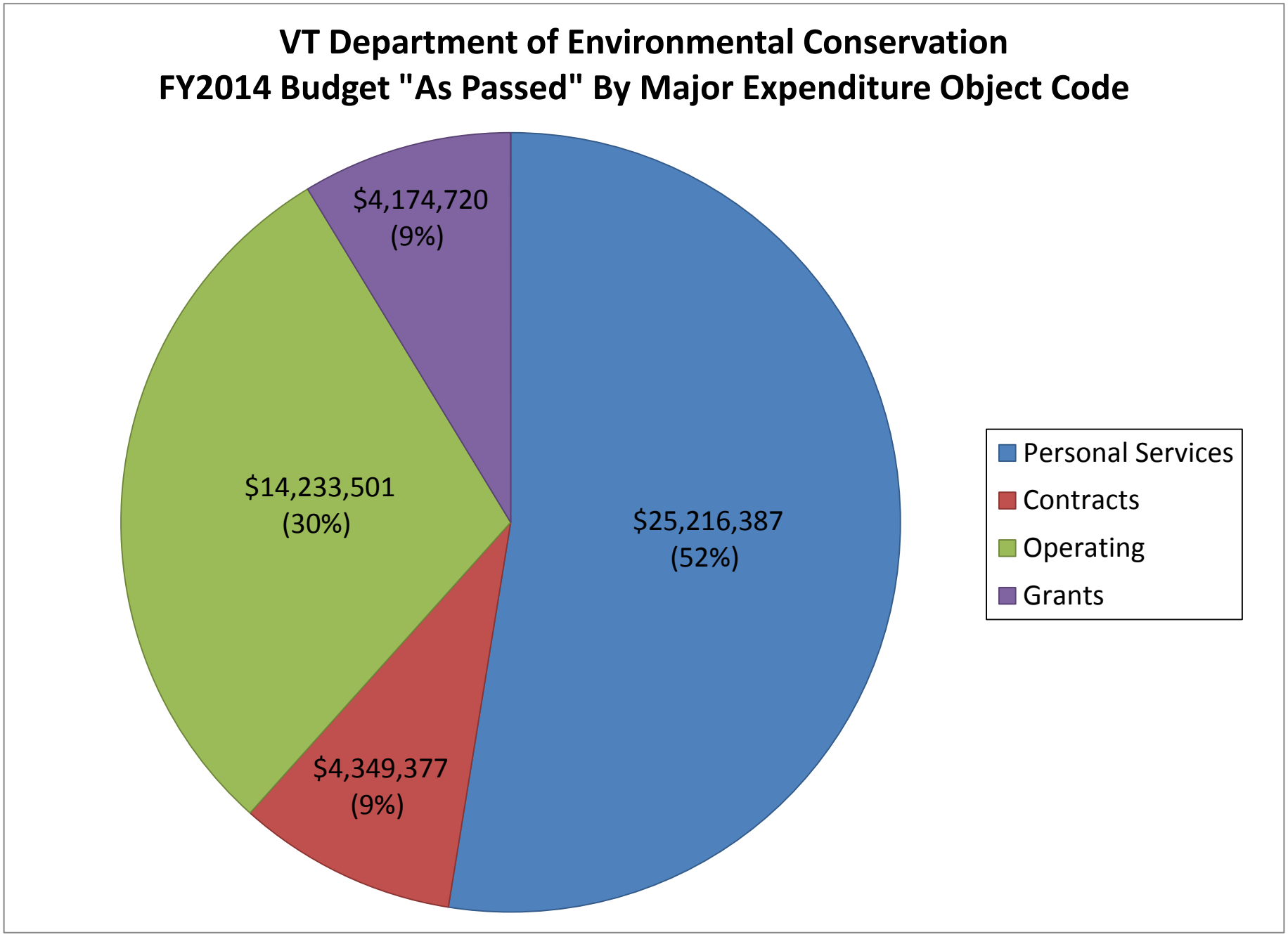
Total (FY14) Full Time Equivalent (FTEs) Employees:
291

VT Department of Environmental Conservation
FY14 Budget Appropriated* by Major Funding Source

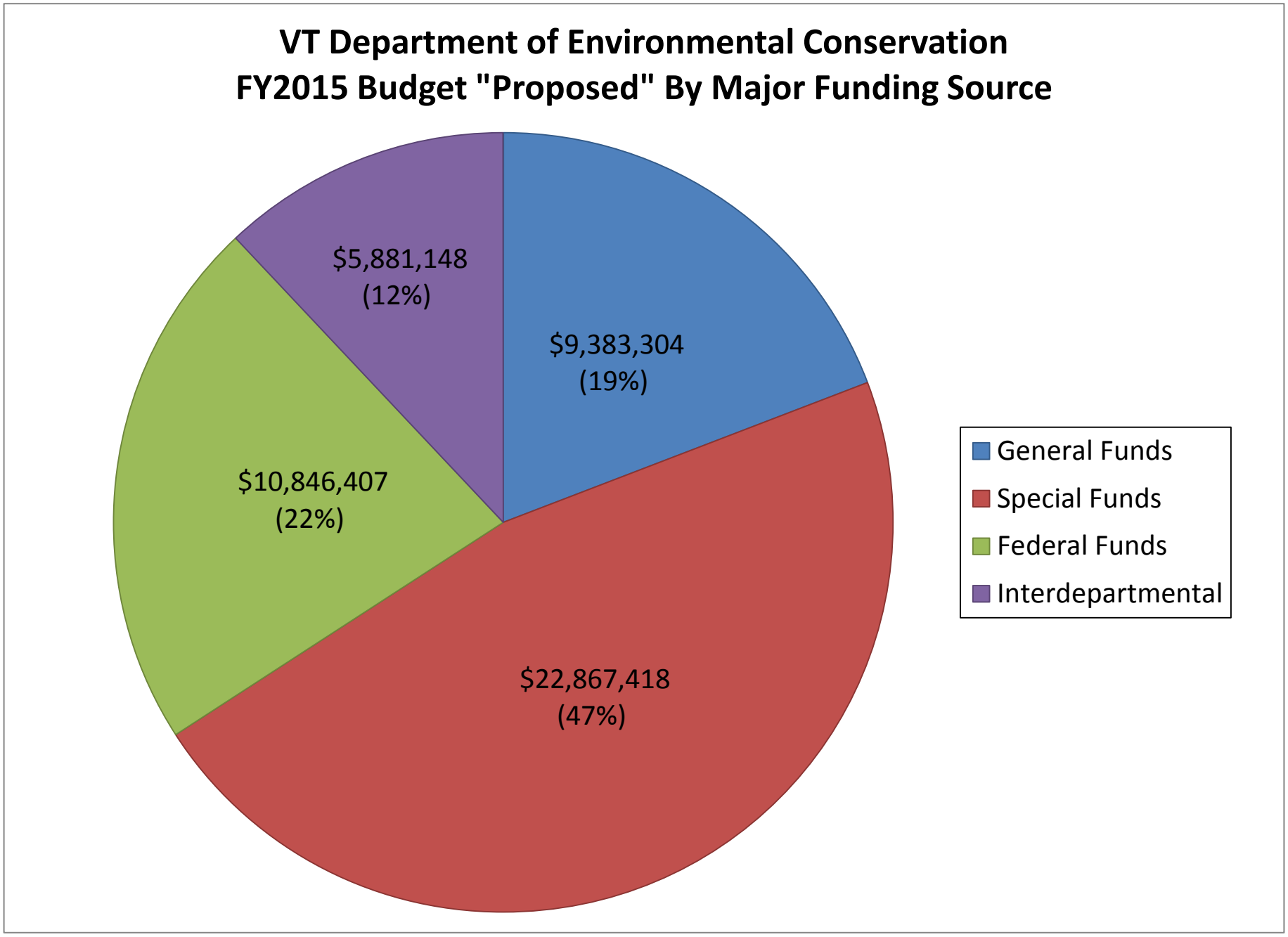


*After Section B.1202 of Act 50
Management Savings Initiative

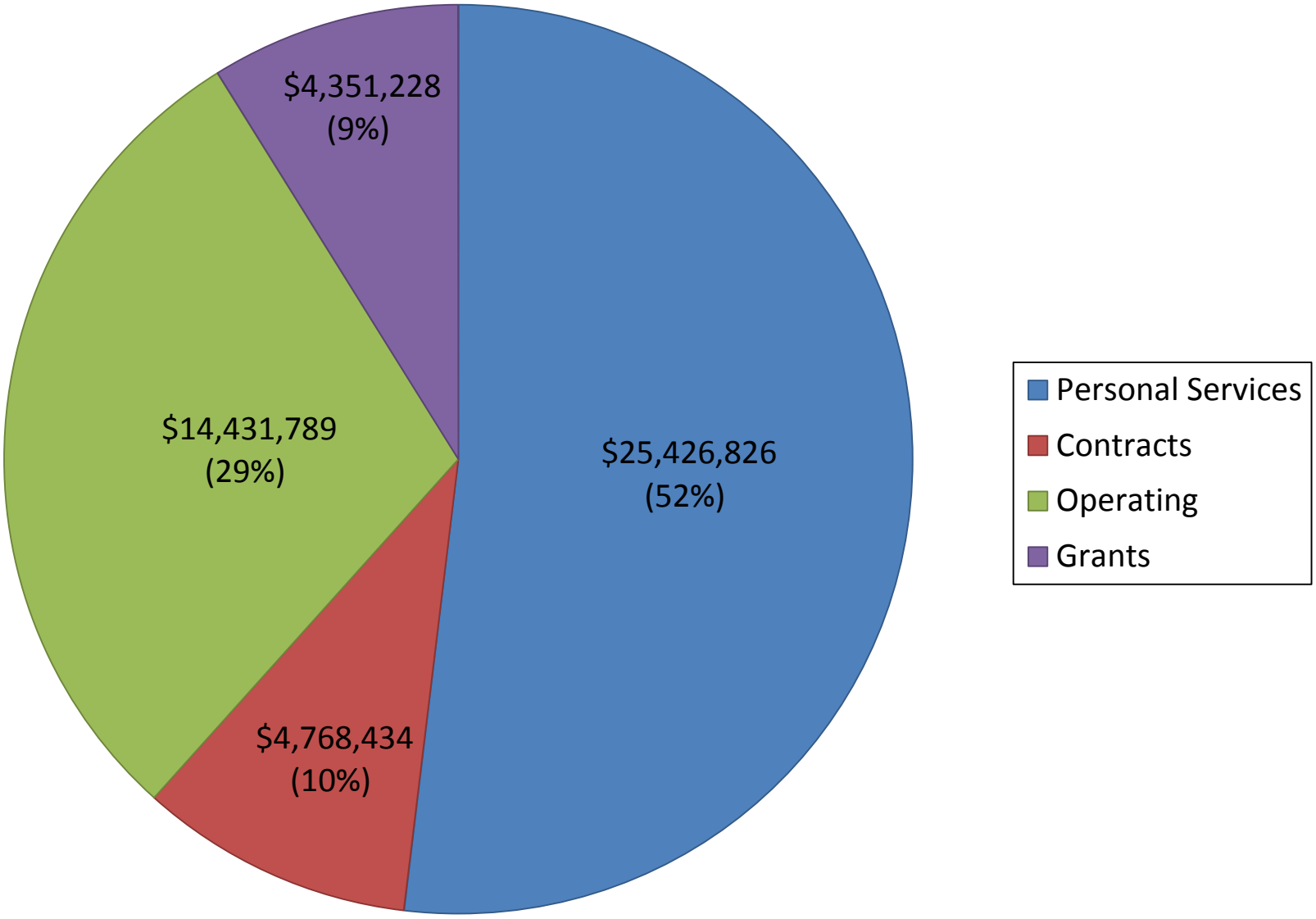
VT Department of Environmental Conservation
FY2014 Budget "As Passed" By Major Expenditure Object Code



VT Department of Environmental Conservation
FY2015 Budget "Proposed" By Major Funding Source



VT Department of Environmental Conservation
FY2015 Budget "Proposed" By Major Expenditure Object Code



Facilities Engineering Division

2015 Performance Measures

Adamant Pond Dam
~Calais, VT

Division Mission

- To provide engineering and financial support for maintaining and improving public facilities and infrastructure to promote public health, safety, recreation, and environmental protection.

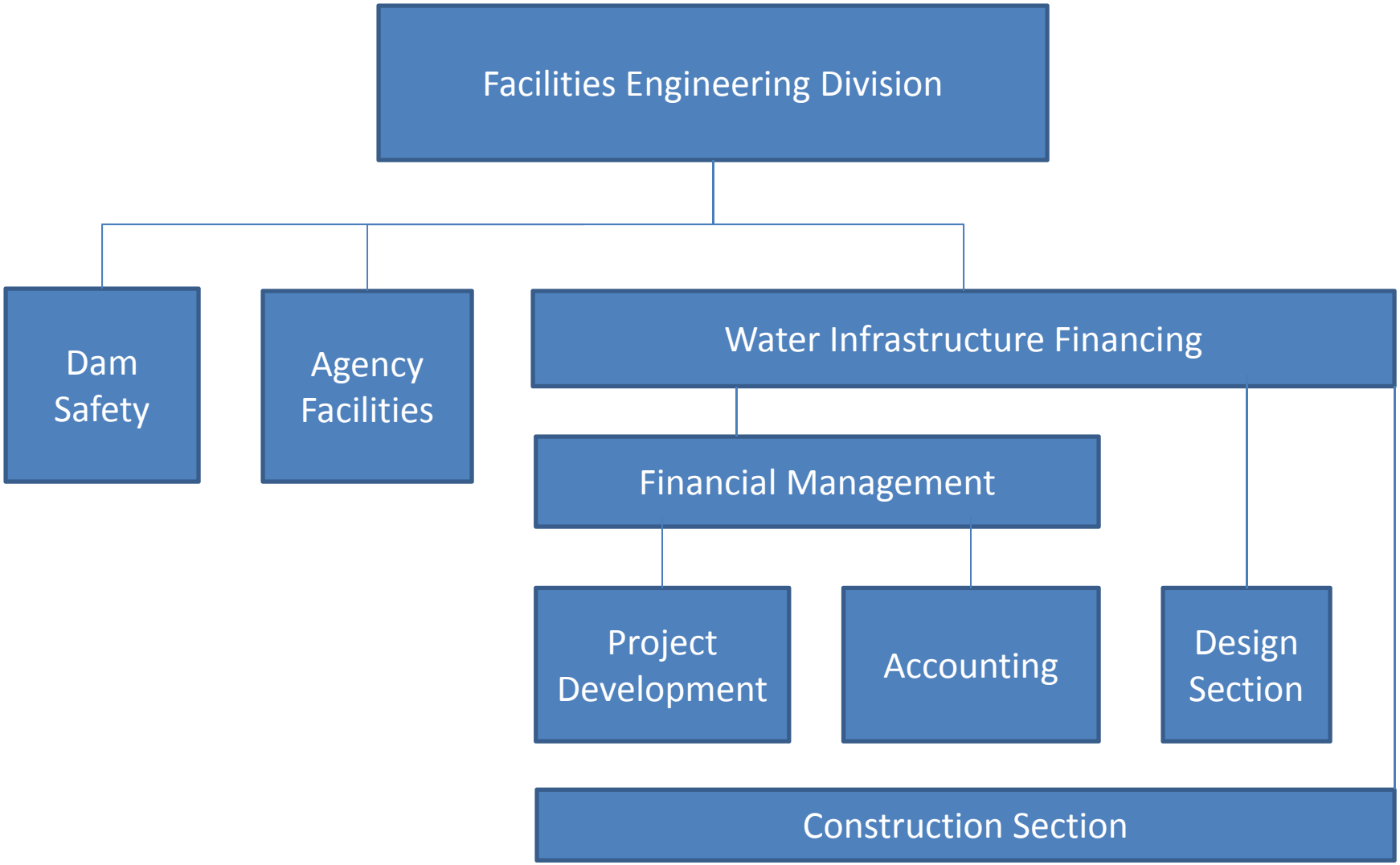
Description of Work

- **Dam Safety** provides dam inspections, emergency support and planning, dam construction and alteration permits and oversight, and maintenance and improvements to Agency of Natural Resources' dams.

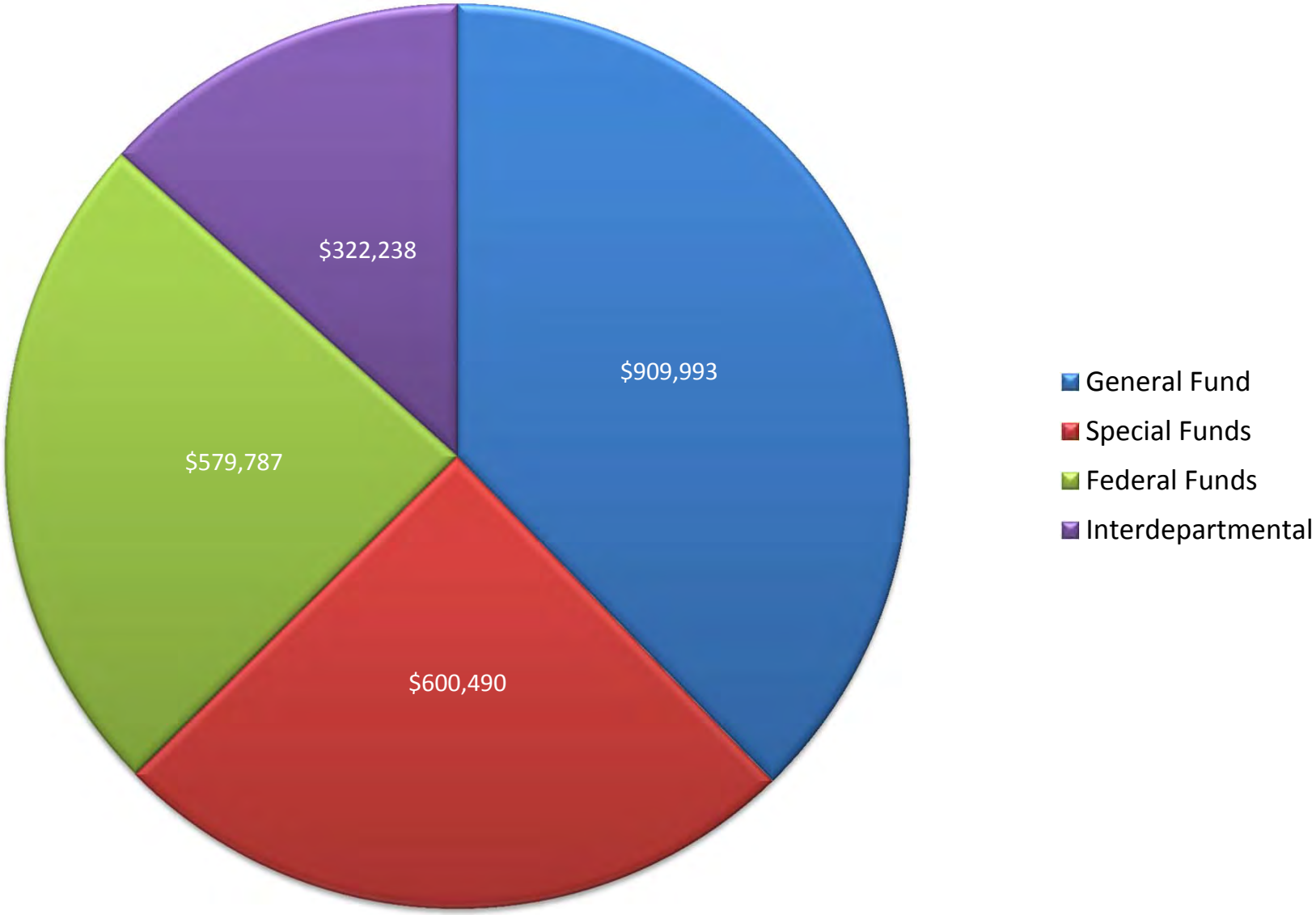
- **Agency Facilities** provide Professional Engineering/Consulting Services for maintaining and improving Agency of Natural Resources' Facilities and Infrastructure, including: State parks, fish hatcheries, fishing access areas, conservation camps, wildlife management areas, dams, and state forests.

- **Water Infrastructure Financing** provides loan and grant administration, financing and project development services, and engineering review and construction oversight for public drinking water and municipal clean water (wastewater and stormwater) improvements projects to optimize the use of public funds, and meet all federal obligations and state environmental standards. Assistance is provided to water infrastructure representatives to ensure long term managerial and financial sustainability.

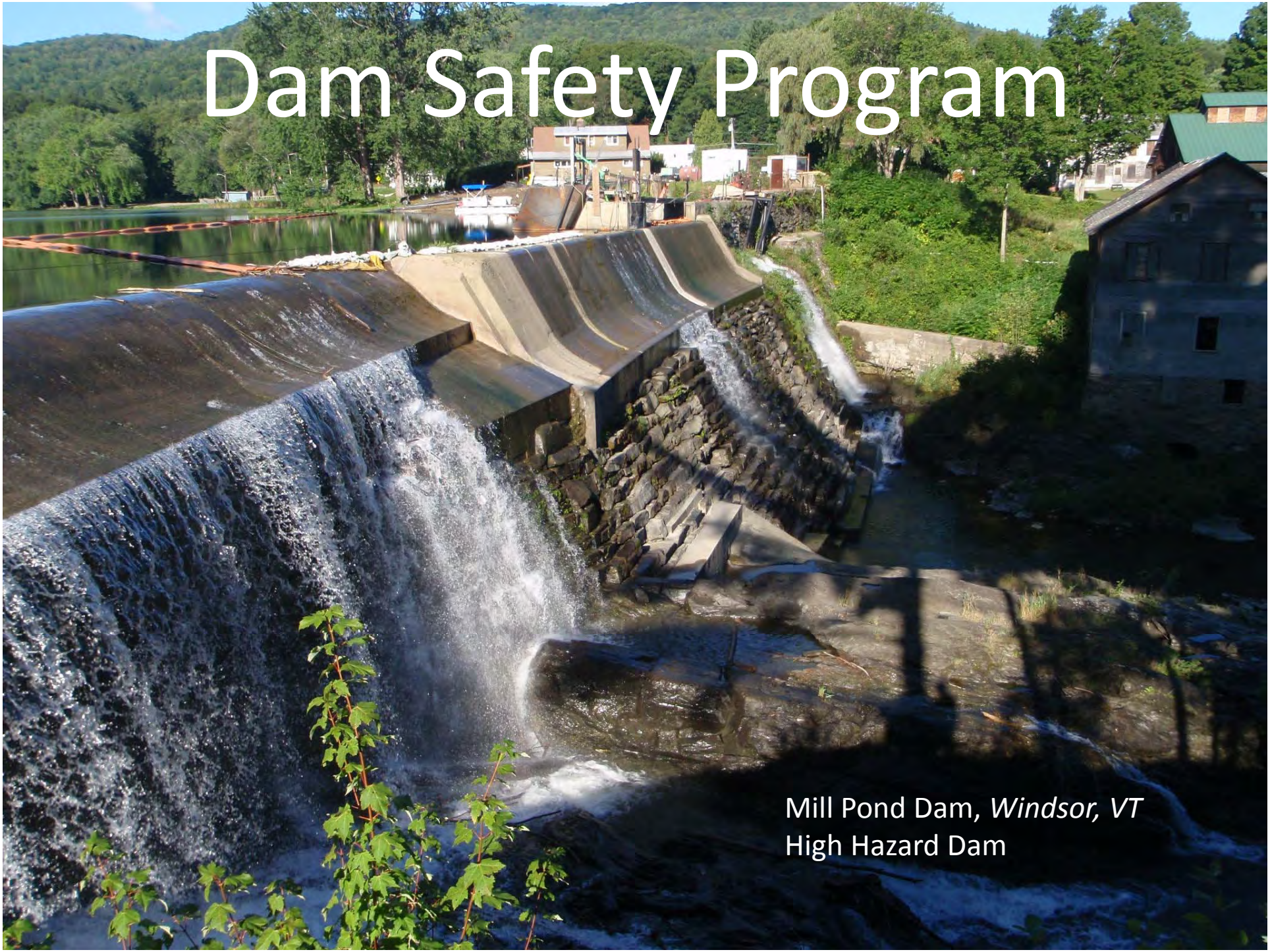
Facilities Engineering Division



DEC Facilities Engineering Divison
FY14 Budget By Major Funding Source



Dam Safety Program

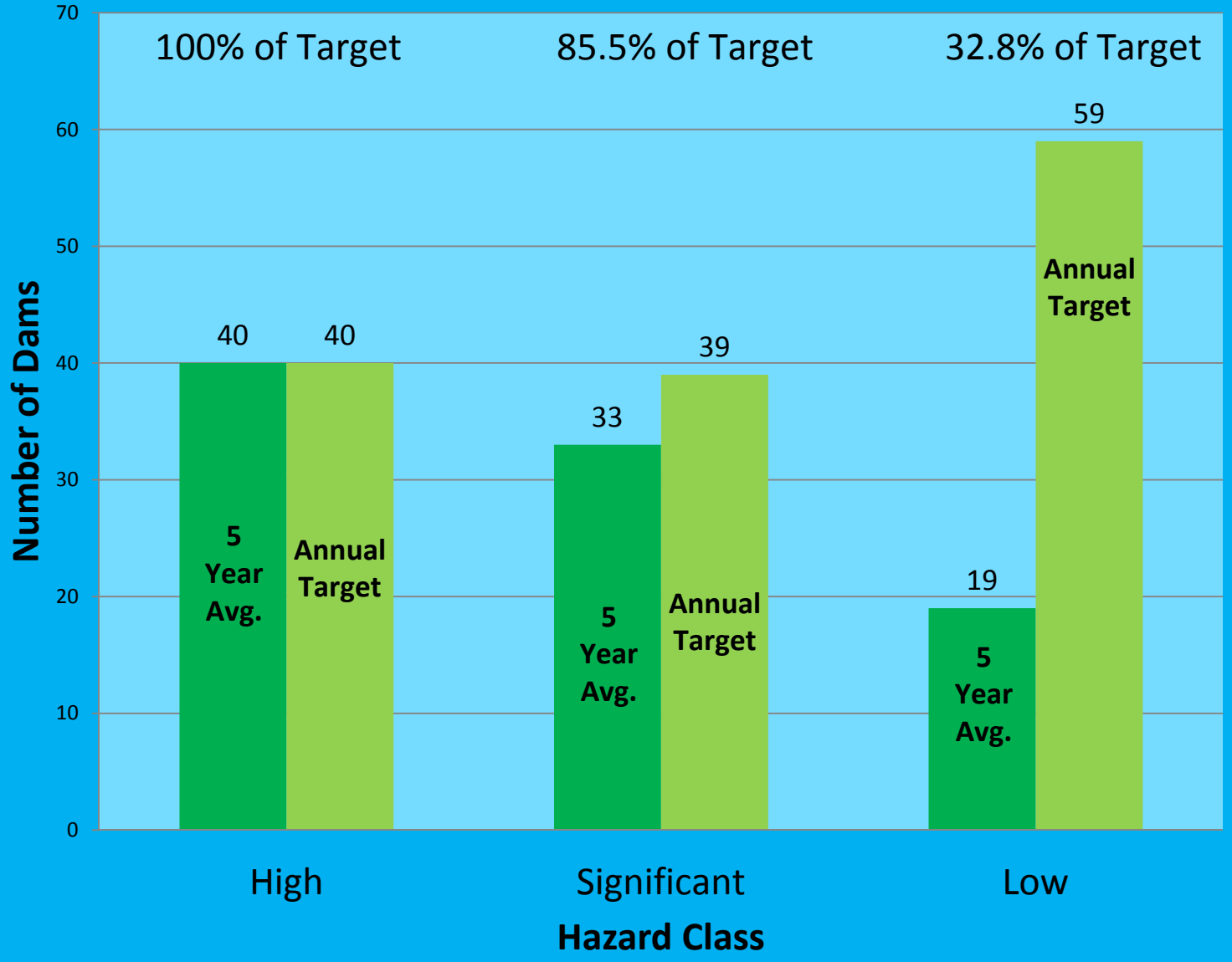


Mill Pond Dam, *Windsor, VT*
High Hazard Dam

Vermont Dam Safety Program:

5 Year Average Inspections vs. Target Inspections

2009-2013



Hazard Class Key

Potential Loss of Life

HIGH = More than a few

SIGNIFICANT = Few

LOW = None Expected

Potential Economic Loss

HIGH = Excessive

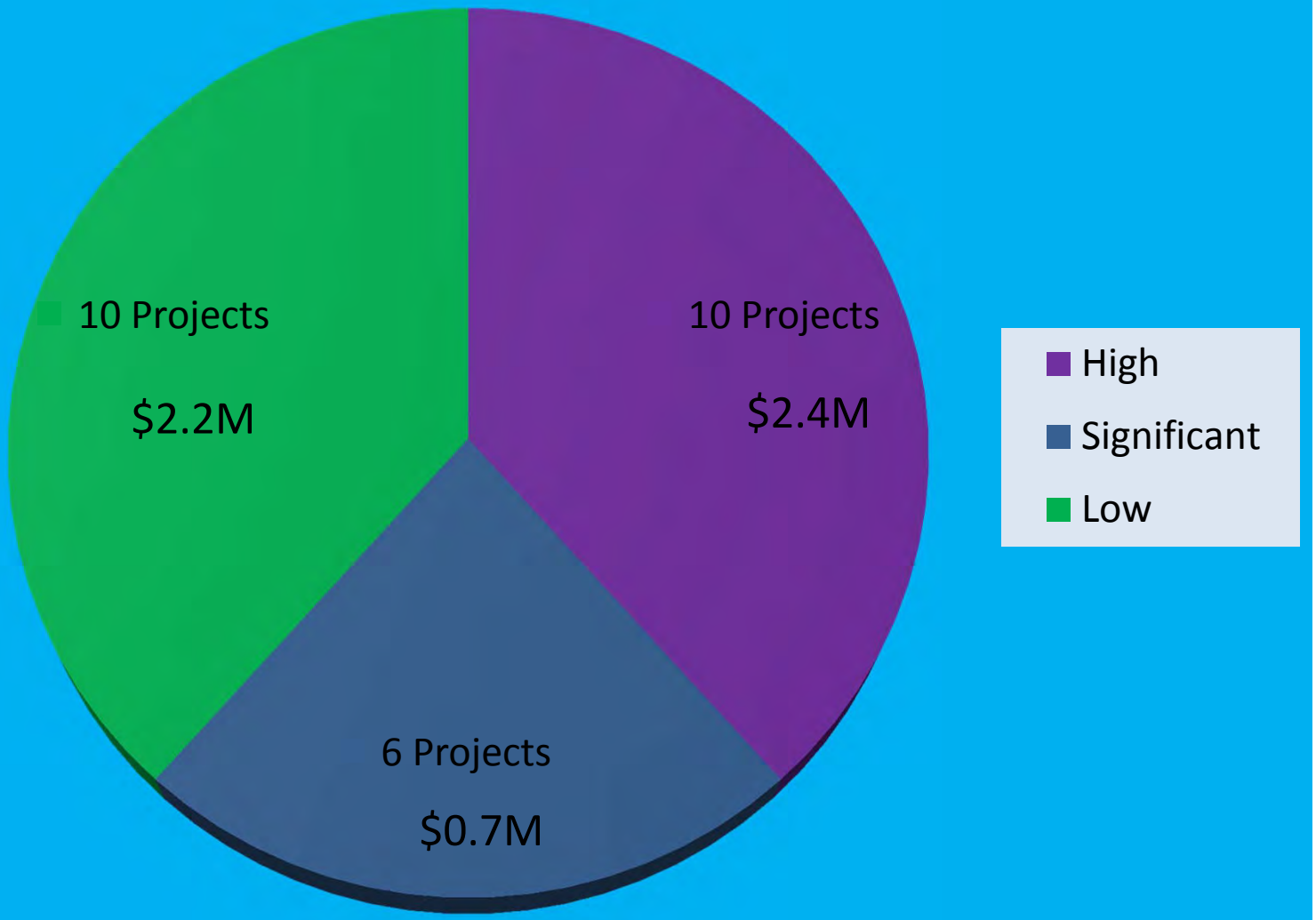
SIGNIFICANT = Appreciable

LOW = Minimal

Vermont Dam Safety Program:

Dam Rehab or Removal Projects by Hazard Class *($Millions)*

2010-2014*



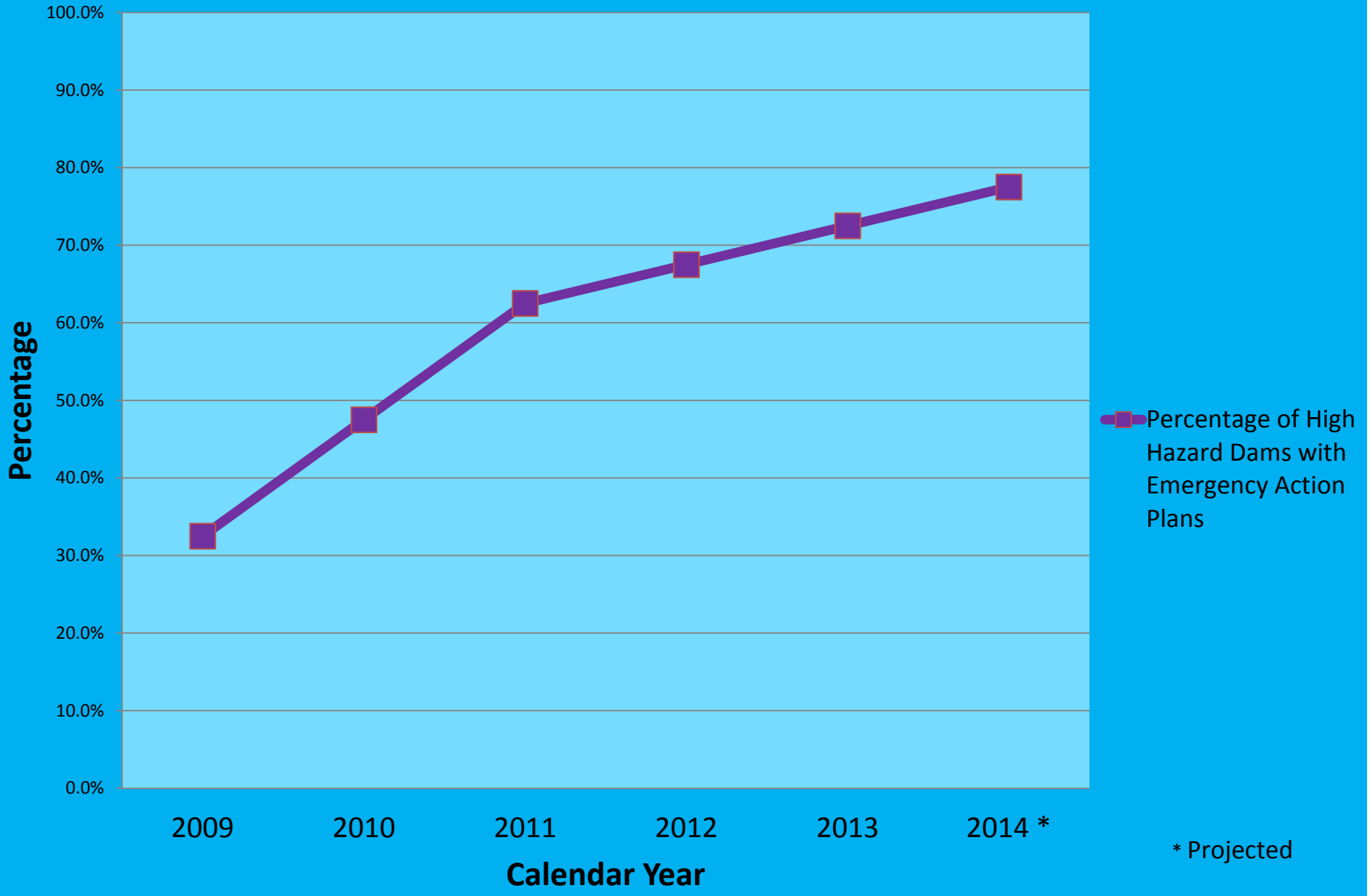
* Projected


Before
Significant Hazard Dam
Dufresne Pond Dam, Batten Kill
~Manchester, VT
2006 5 10


After
No Hazard
Batten Kill Restored, Dufresne Pond Dam Removal
Fall 2013

Vermont Dam Safety Program:

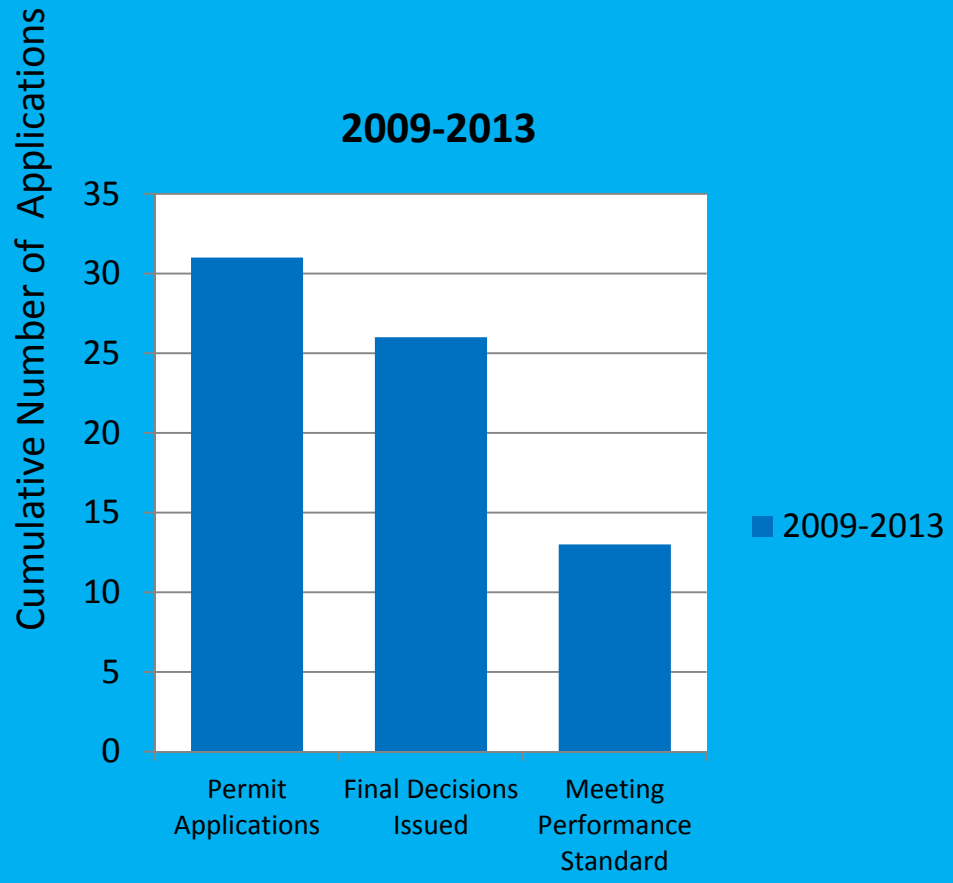
Emergency Action Plans for High Hazard Dams

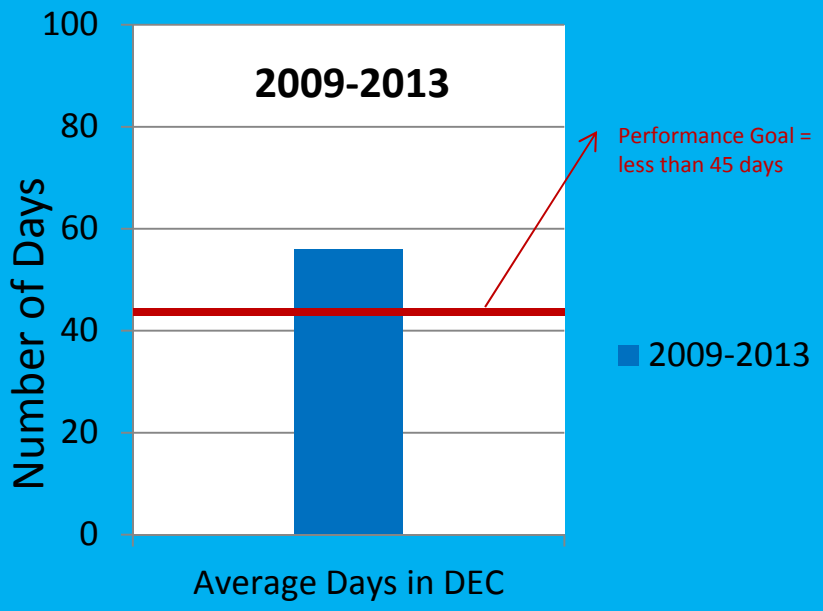


Vermont Dam Safety Program:

Permitting and Approvals
2009-2013

Facilities Engineering Division – Dam Orders (Permits)





Agency Facilities

- In-sourcing- Considerable savings and increased value compared to private sector consultants (approximately 50% $ savings) which includes benefits attributable to intrinsic knowledge of the agency's structure, processes, and stakeholders

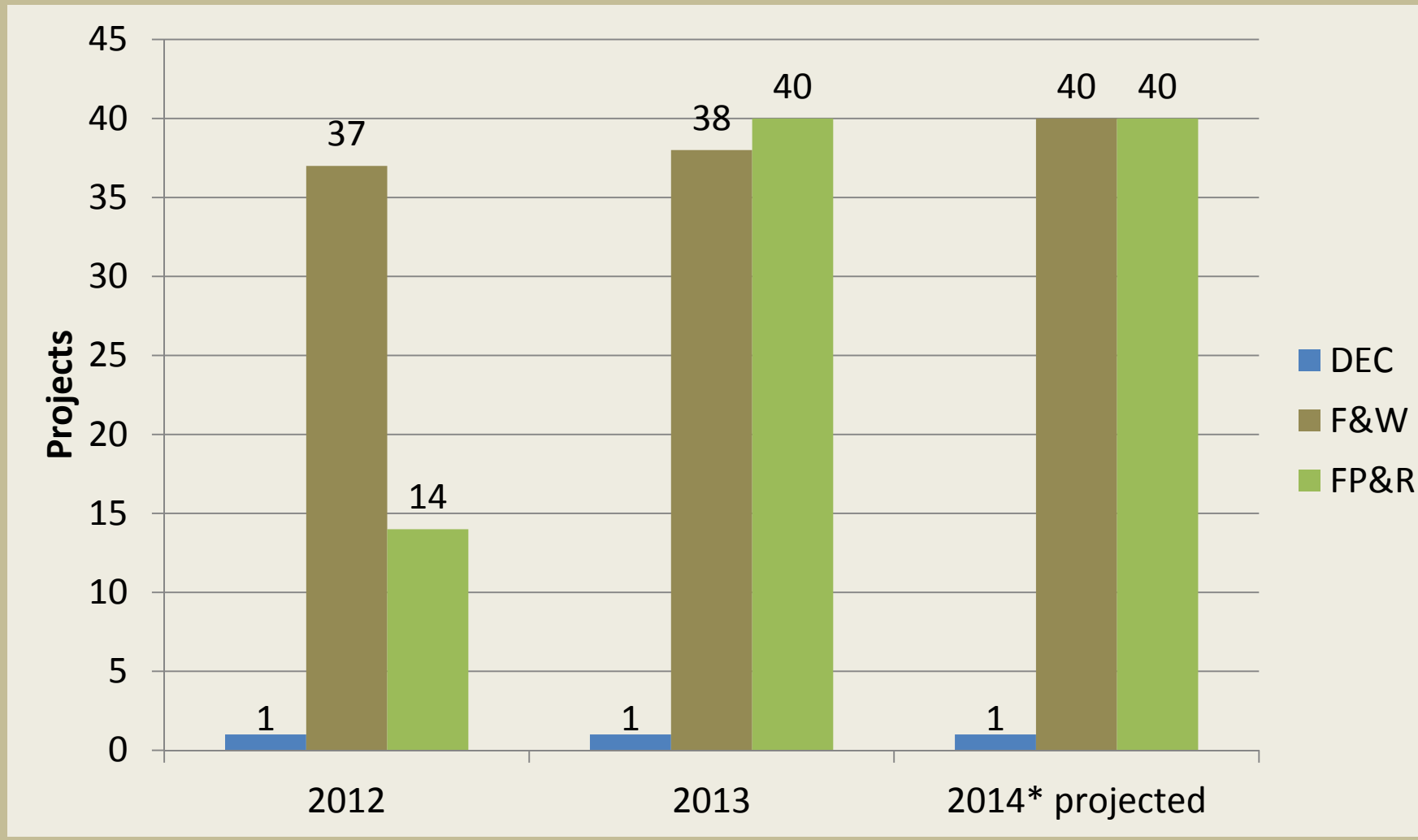
- Misc. Duties- Inspect wastewater systems at 9 major state parks, consultant oversight, and provide professional engineering consulting to the agency

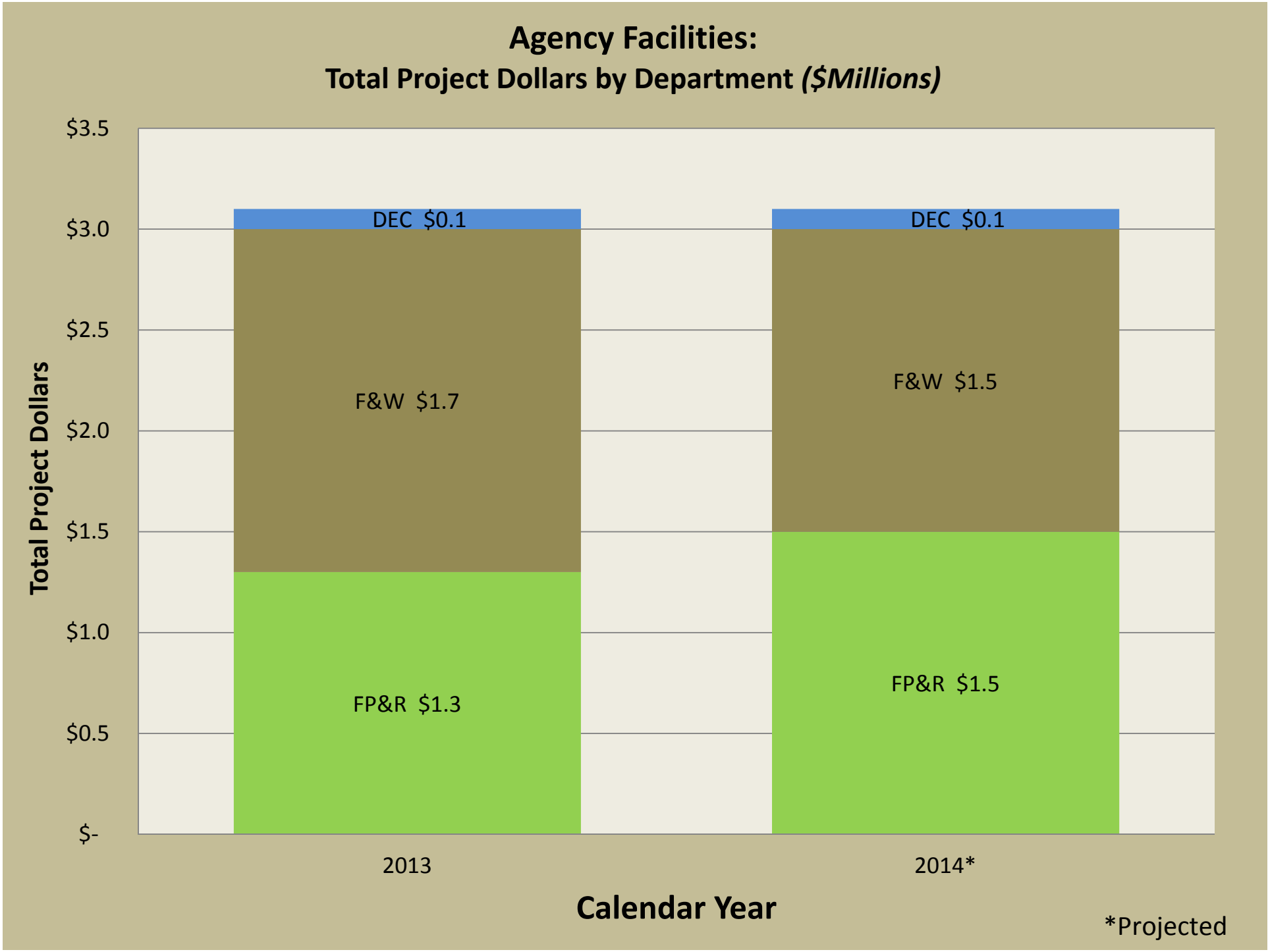
Rood Pond Universal Fishing Platform

Laphram's Bay Access Area

Agency Facilities:

Total Number of Projects by Department




Agency Facilities:
Total Project Dollars by Department ($Millions)
$3.5
$3.0
$2.5
$2.0
$1.5
$1.0
$0.5
$-
Total Project Dollars
DEC $0.1
F&W $1.7
FP&R $1.3
DEC $0.1
F&W $1.5
FP&R $1.5
2013
2014*
Calendar Year
*Projected

Kent Pond spillway- after TS Irene
~ *Killington, VT*

Kent Pond spillway
~Killington, VT

Drinking Water Project Financing

Total Coliform Notice–

DRINKING WATER NOTICE

Tests show presence of coliform bacteria in water

VERMONT
ENVIRONMENTAL CONSERVATION
Drinking Water & Groundwater Protection Division

PUBLIC NOTICE CERTIFICATION

Pursuant to the Vermont Water Supply Rule (Chapter 21, Subchapter 21-10), water
public notification in a manner that ensures that all users of the system are notified.
return this form and a copy of each type of notice that you issued to the below
of issuing the public notice.

Public Water System Name:	TOWN OF WINDSOR
Public Notice issued for:	WINDSOR WATER SYSTEM
Date System first learned of violation or situation:	9-13-13 @ 2pm

For **Tier 1 violations:** Consultation with Water Supply Division took place on 9
(Tier 1 includes all MCL violations and disease outbreaks)

Drinking Water Project Financing

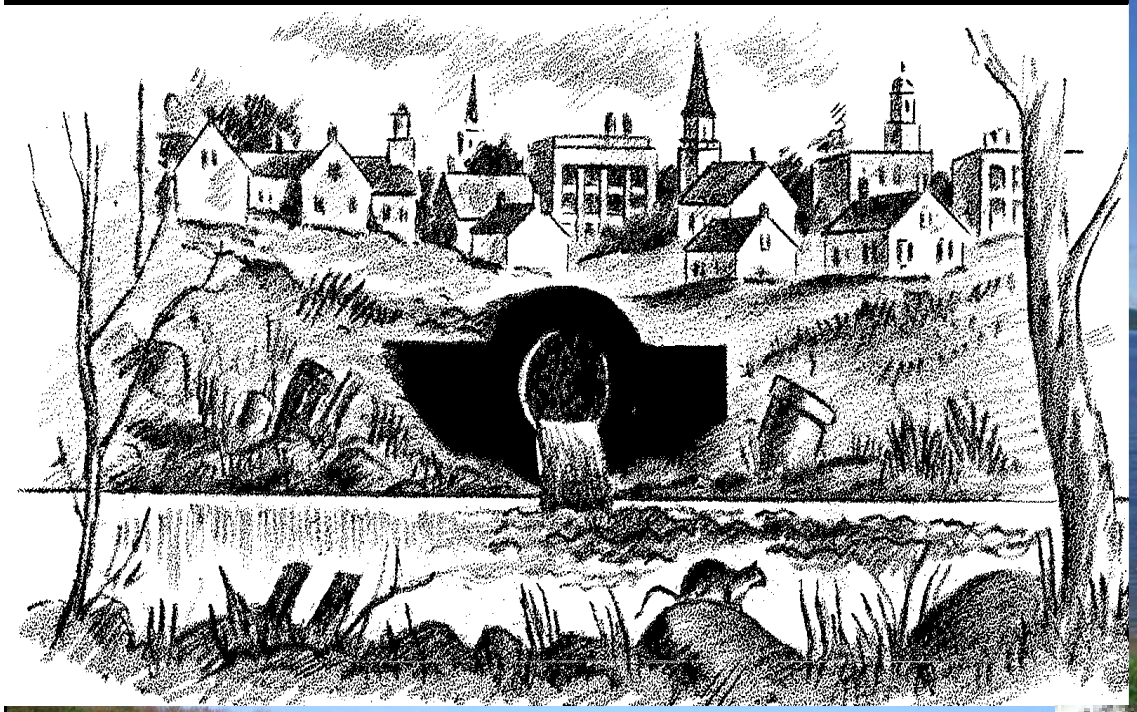
Water Storage Tank
~Williamstown, VT

Drinking Water Filtration Facility
~Newbury, VT

Drinking Water Project Financing:
Loans and Grants

*Projected

Clean Water State Project Financing



Wastewater Treatment Facility Secondary Lagoon
~Swanton, VT, 2013

Burlington Vermont

Clean Water State Project Financing

Solar Sludge Drying
~Troy, VT

Vermont State Park

Stormwater Pond
~Essex, VT

Wastewater Clarifier
~Brattleboro, VT

Clean Water Project Funding Sources

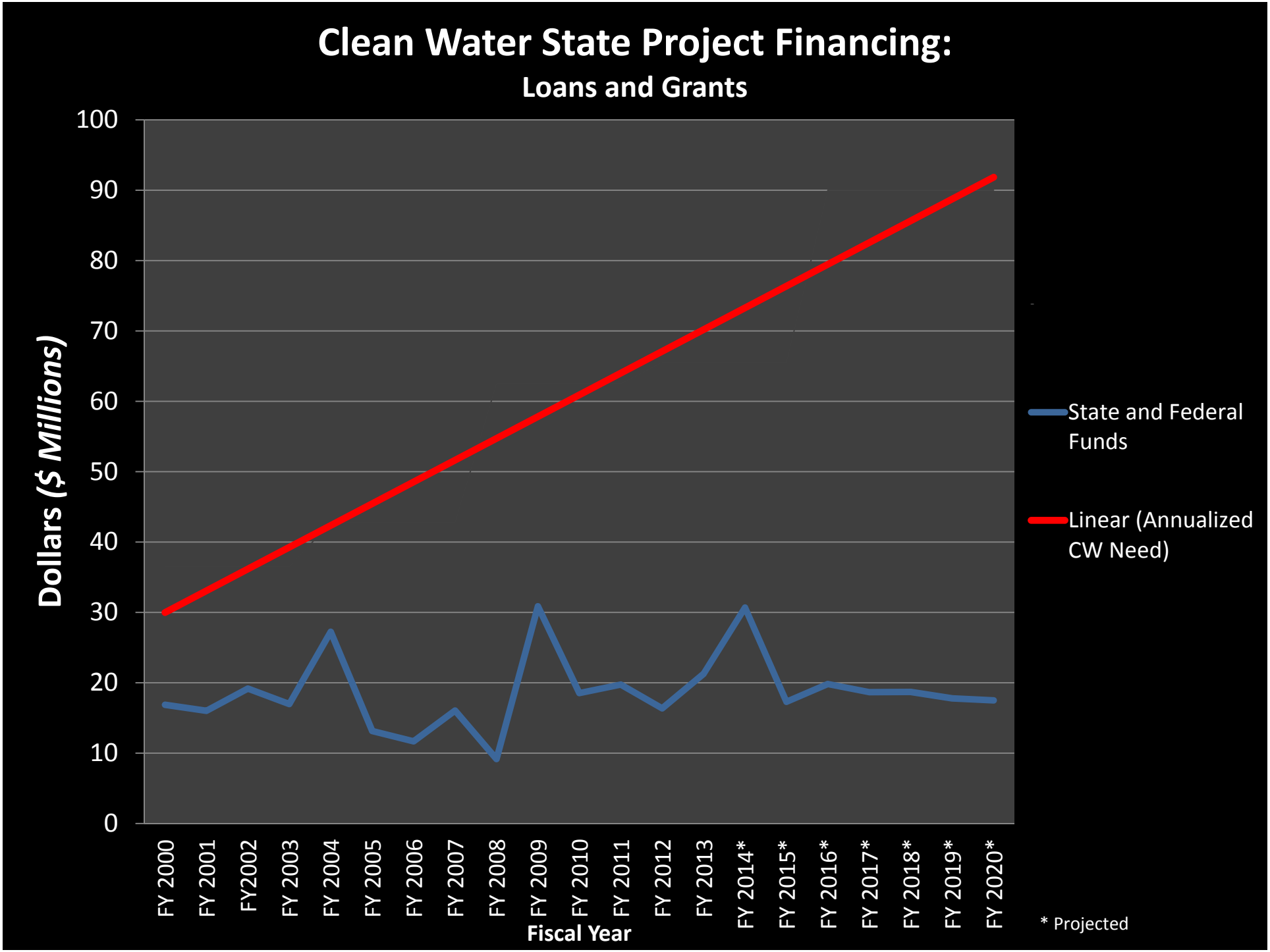
Funds Received – Actual and Projected 2000 through 2020

Federal

- USEPA: State Revolving Fund (SRF) $126.7M
- State and Tribal Assistance Grants (STAG) American $20.5M
- Resource Recovery Act (ARRA) $19.2M

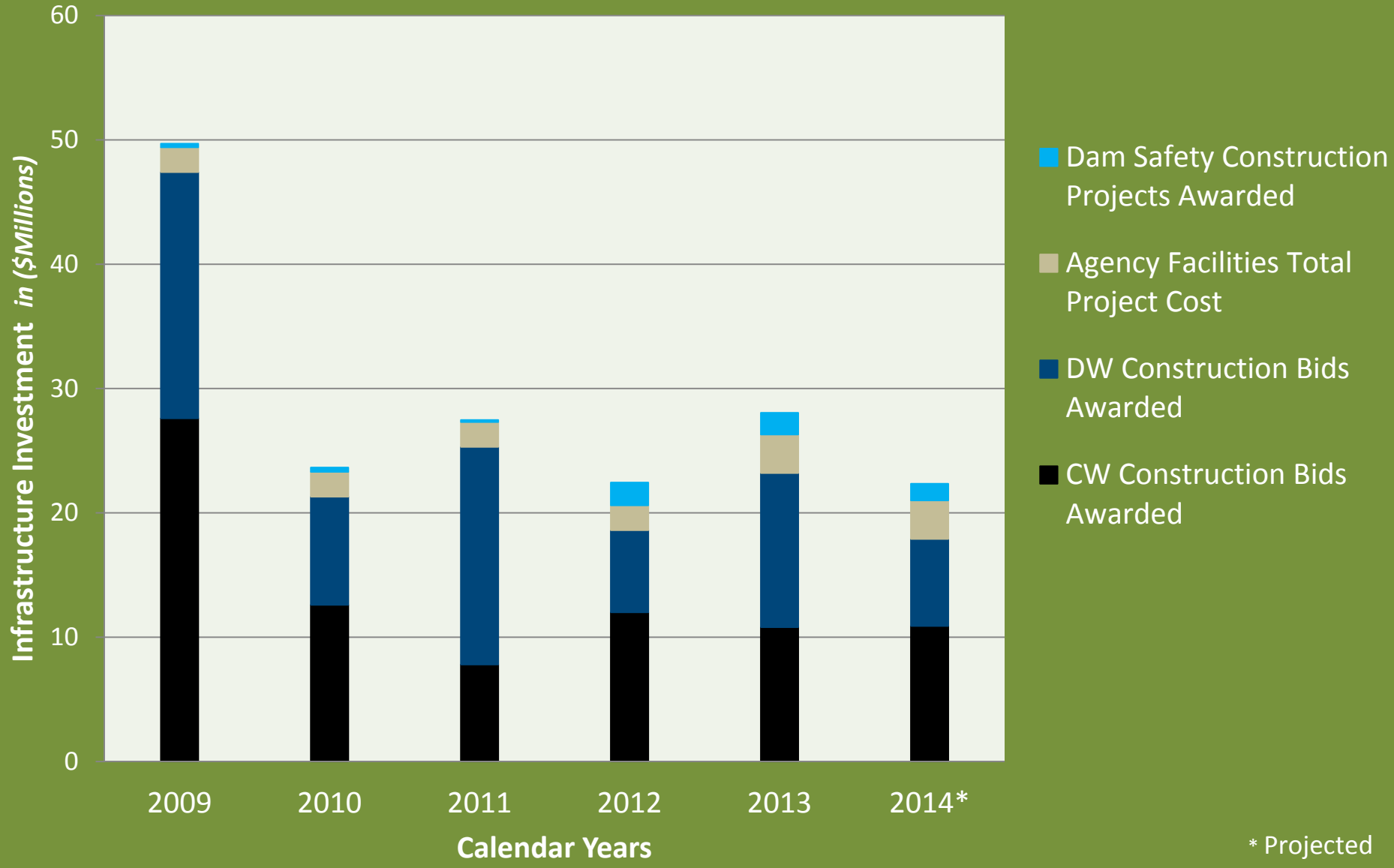
State

- SRF: Requires 1:5 State Match Dollars $25.3M
- Phosphorus Grants $18.8M
- Septage Grants $5.7M
- Combined Sewer Overflow (CSO) Grants $14.8M
- Dry Weather Pollution Abatement Grants $12.9M
- SRF Loan Repayments $148M


Clean Water State Project Financing:
Loans and Grants
Dollars ($ Millions)
100
90
80
70
60
50
40
30
20
10
0
FY 2000
FY 2001
FY2002
FY 2003
FY 2004
FY 2005
FY 2006
FY 2007
FY 2008
FY 2009
FY 2010
FY 2011
FY 2012
FY 2013
FY 2014*
FY 2015*
FY 2016*
FY 2017*
FY 2018*
FY 2019*
FY 2020*
Fiscal Year
State and Federal Funds
Linear (Annualized CW Need)
* Projected

Facilities Engineering Division:

Annual Infrastructure Investment 2009-2014*



* Projected

Education and Outreach

- Financial Capacity Outreach – 75 municipal entities
- Operator Training – Statewide training to operators of public water systems
- Davis Bacon Education Seminar – 60± participants
- Provide Speaker for VT Rural Water and Green Mountain Water Environment Association Meetings: 30-60 attendees each meeting
- Wastewater Solutions for Vermont Communities: Technical and Funding Options, presented to 3 Regional Planning Commissions representing 80± towns.

Curtis Pond Dam
~*Calais, VT*

2015 Performance Measures

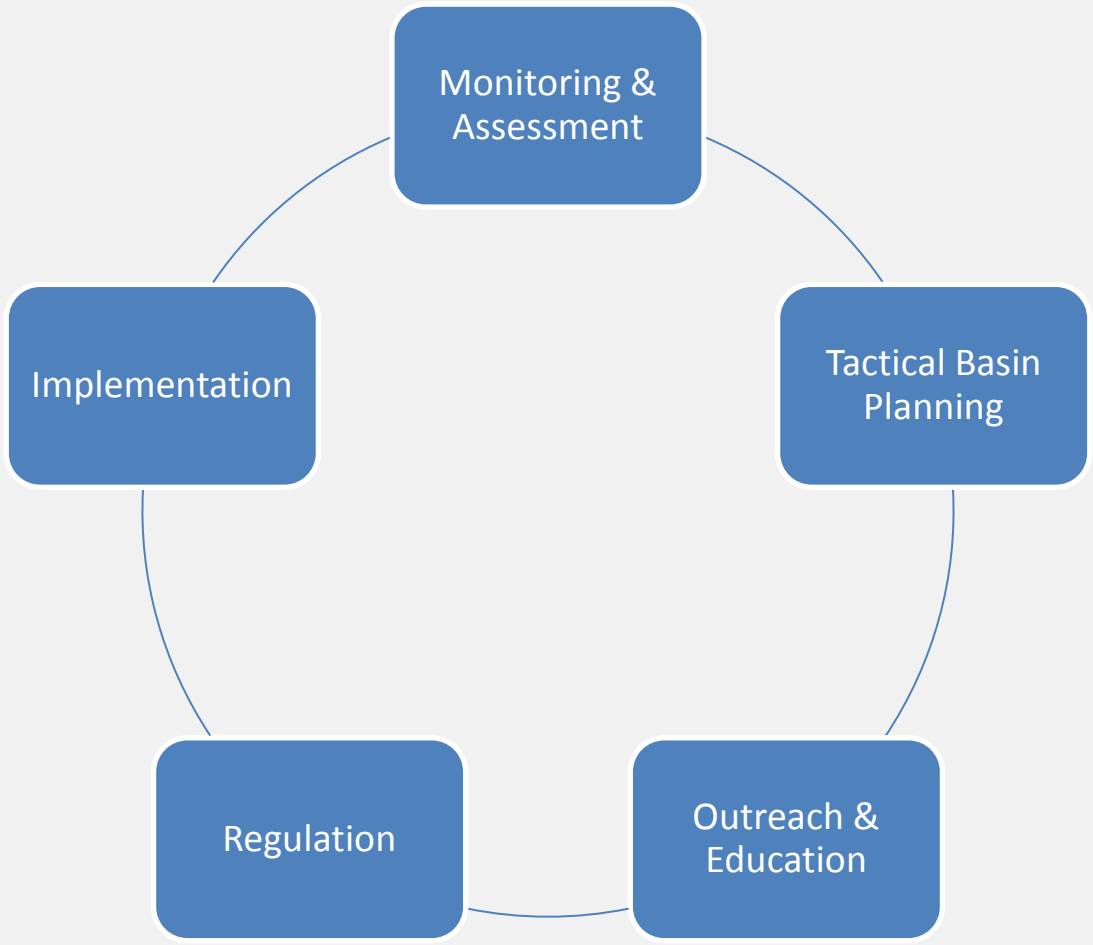
Watershed Management Division Mission Statement

To protect, maintain, enhance and restore the quality of Vermont's surface water resources.

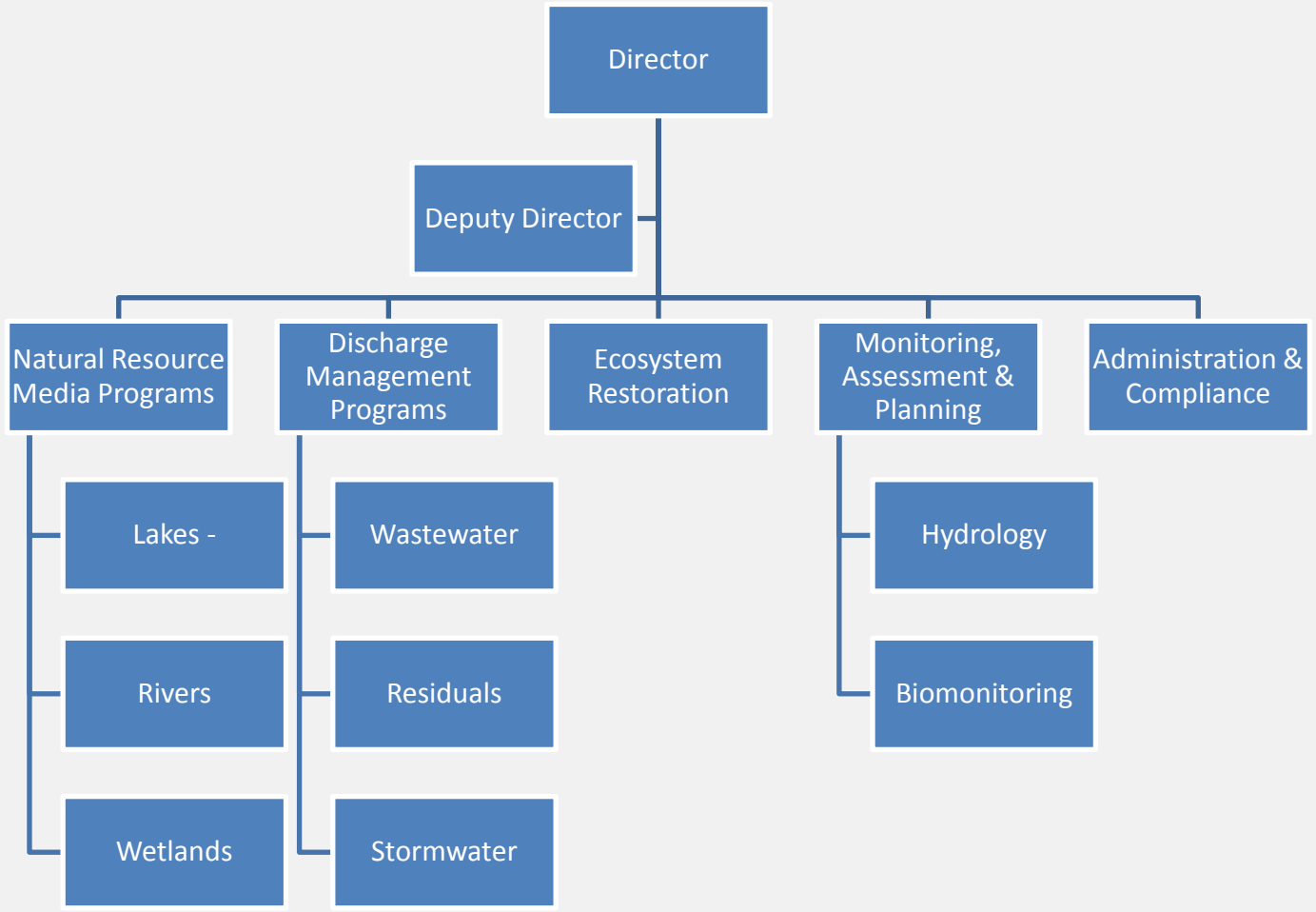
Description of Work

- Support both healthy aquatic ecosystems and public uses in; and on more than:
  - 800 lakes and ponds
  - 7,100 miles of rivers and streams
  - 300,000 acres of wetlands that exist within the State of Vermont.
- Three media-specific programs provide for the comprehensive management of Wetlands, Rivers, and Lakes.
- The Division also supports the integrity of surface waters by administering programs to regulate wastewater discharges and stormwater runoff.
- New Monitoring, Assessment and Planning program serves to integrate the Division's efforts across these programs through the use of our Statewide Surface Water Management Strategy, and to develop watershed basin plans consistent with this strategy.

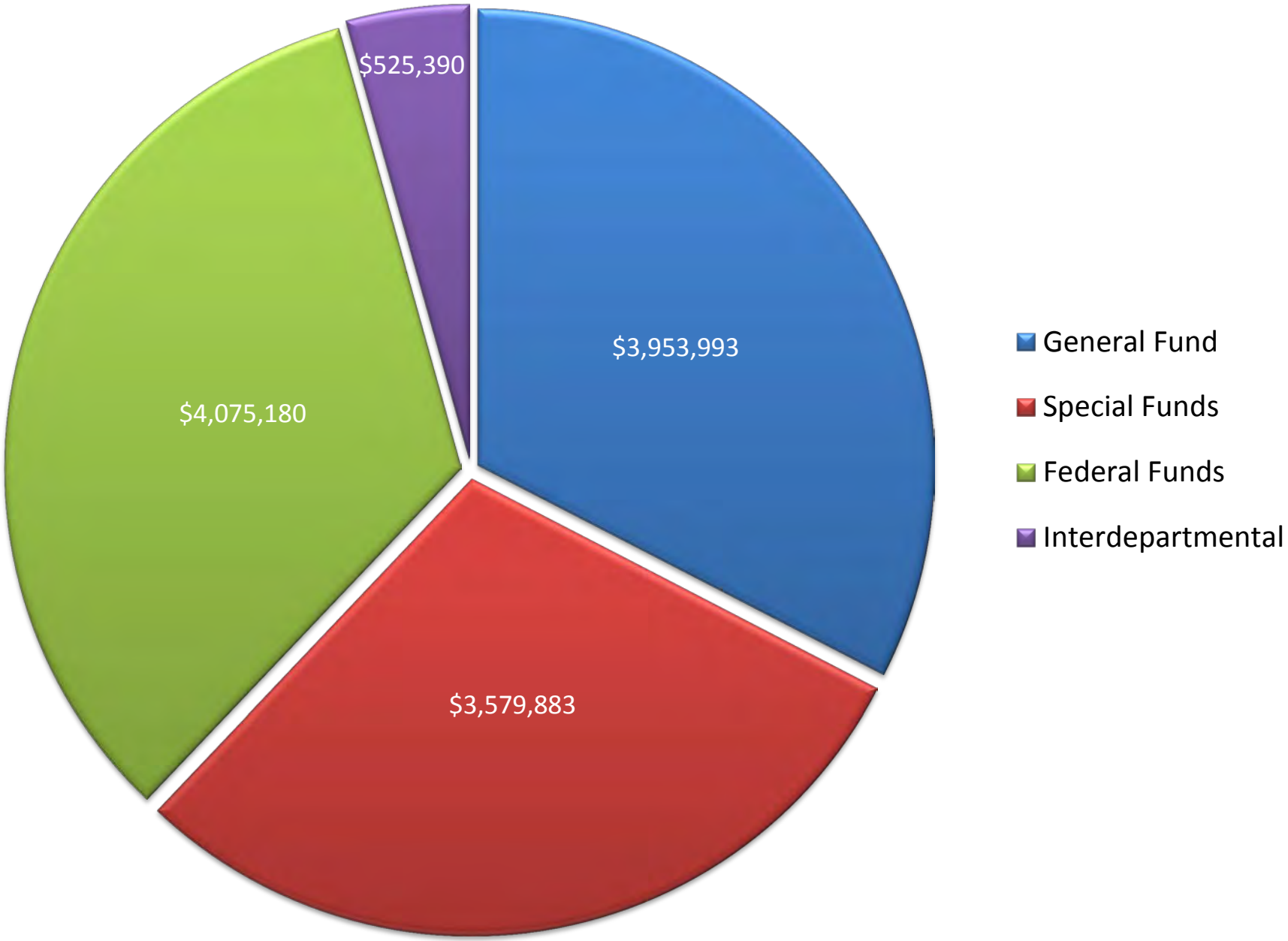
Watershed Management Division Surface Water Management Process



Watershed Management Division Organizational Structure



DEC Watershed Management Division
FY2014 Budget By Major Funding Source



Recent Division Accomplishments:

- Developed Vermont Surface Water Management Strategy
- Launched Watershed Division Blog
- Implementing Tactical Basin Planning
- Developing Long Island Sound TMDL Implementation Plan
- Collaborate with EPA on development of Lake Champlain TMDL
- Working in Cooperation with Agency of Agriculture, Food and Markets on farm water quality issues
- Implementing Division Strategic Planning

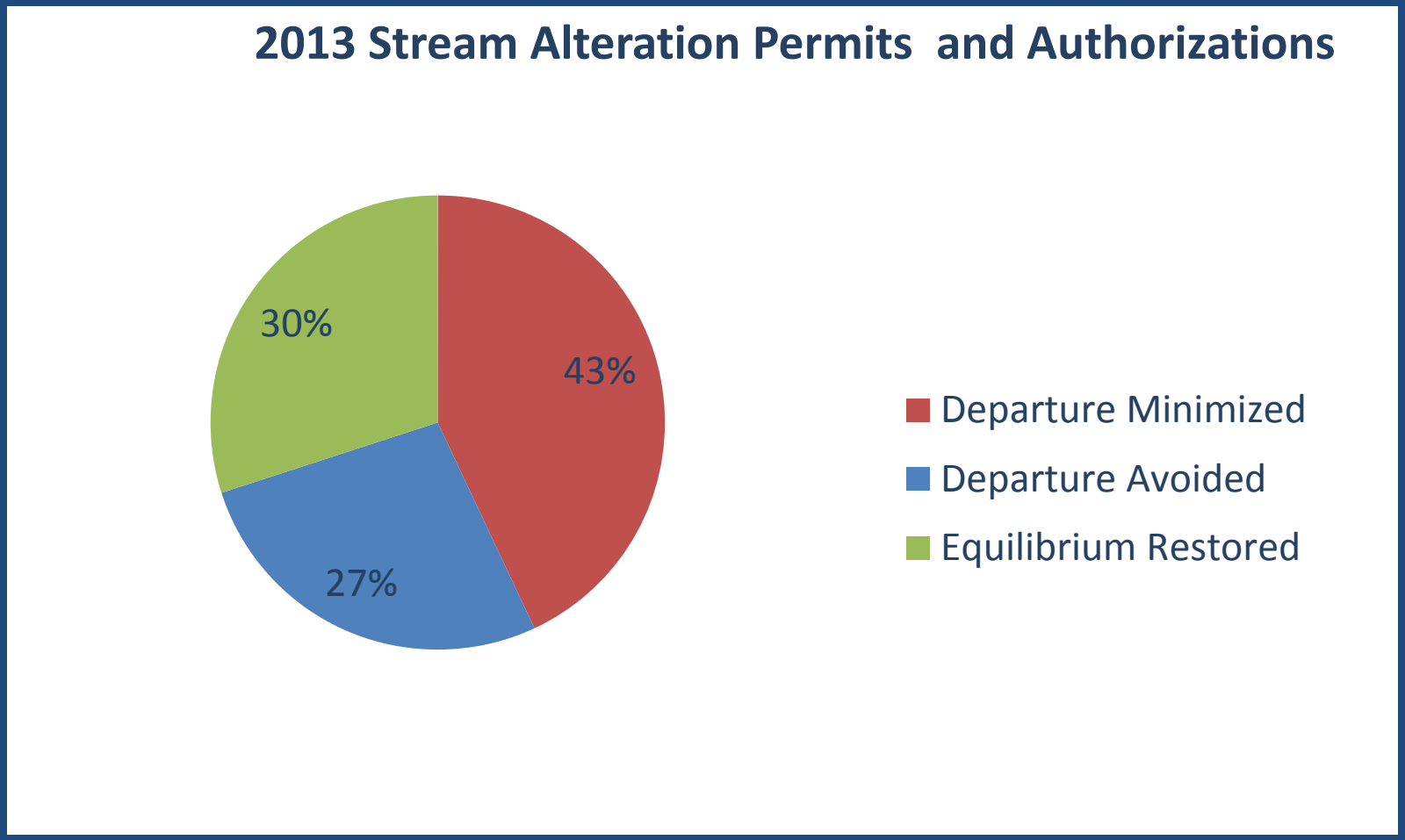
Recent Division New Initiatives:

- Ecosystem Restoration Program
  (former "Clean & Clear program)
- Wastewater and Residuals Program
- Green Infrastructure Initiative
- Agricultural Stormwater Runoff
- Hydrology Program
- Water Quality Certification Program
- Water Rules from Water Resources Panel
  - ✓ VWQS
  - ✓ Use of Public Waters Rule
  - ✓ Surface Level Rule
  - ✓ Designation of Class I Wetlands and Outstanding Resource Waters

New Regulatory Responsibilities:

- General Permit for the application of pesticides over surface waters
- CAFO (Concentrated Animal Feed Lot Operation) General Permit
- General Permit for discharges to water from large boats
- Expansion of stream alteration permits, including emergency permits

DEC River Engineering working to reduce emergency measures and restore the natural stream processes that mitigate flood damage



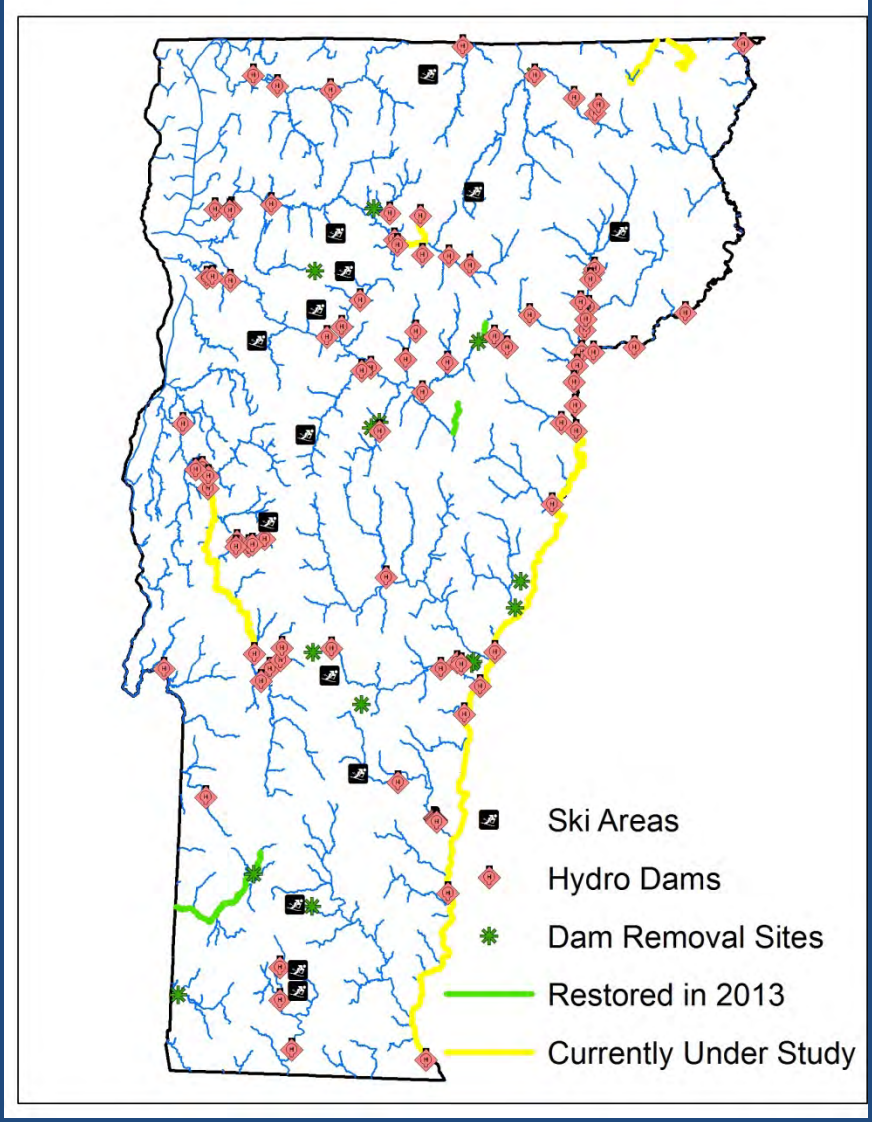
DEC River Engineers:

- Technically assist ~800-1000 project per year
- Permit ~500 projects per year

FEMA Public Assistance Projects from 1999 through 2013

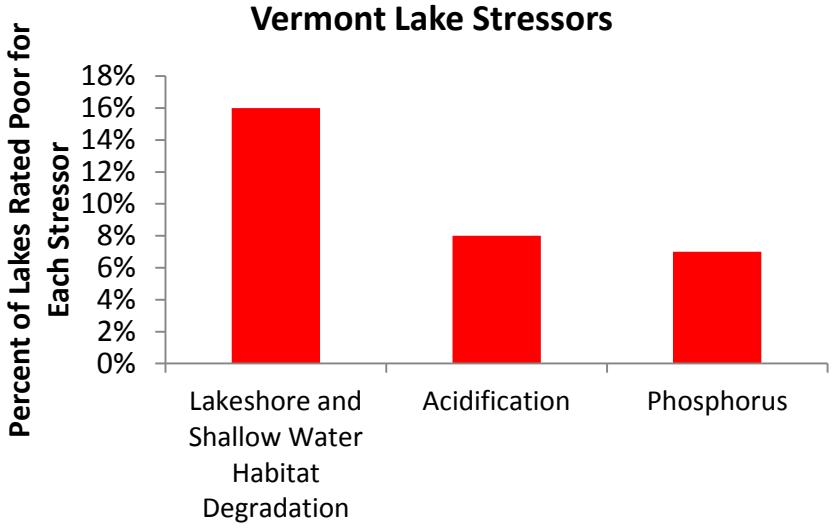

Roaring Branch Floodplain Restoration
Bennington, VT

DEC Streamflow Protection working to restore and protect streamflow and connectivity of Vermont rivers to improve water quality and aquatic habitat

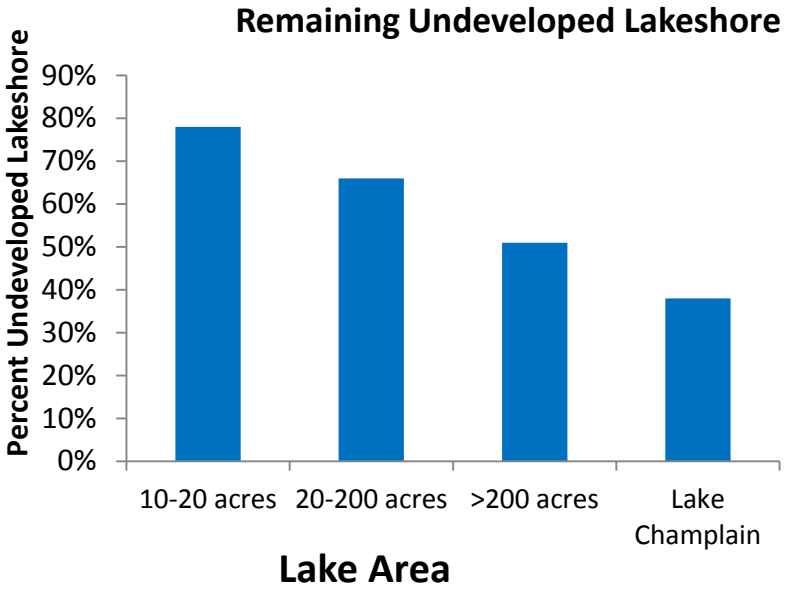


- Provide technical assistance and monitor compliance of 85 hydroelectric projects
  - In 2013: Assessment of 120 miles of the Connecticut River to restore streamflow, water quality, and aquatic habitat through project relicensing
- Provide technical assistance to and monthly compliance monitoring for 14 alpine and cross country ski areas
  - In 2013: 2.2 billions gallons of water withdrawn from surface waters for snow making without major non-compliance event
- Restoration of altered river systems
  - 15 dams removed since 2003. Resulting in greater than 100 river miles of connectivity restored

Lakes and Ponds



More Vermont lakes rank in poor condition for lakeshore and shallow water habitat conditions than for acidification or phosphorus pollution. Development in close proximity to the lake, alterations of the natural shoreline, and loss of shoreline vegetation are the main reasons for degradation of lakeshore and shallow water habitat.

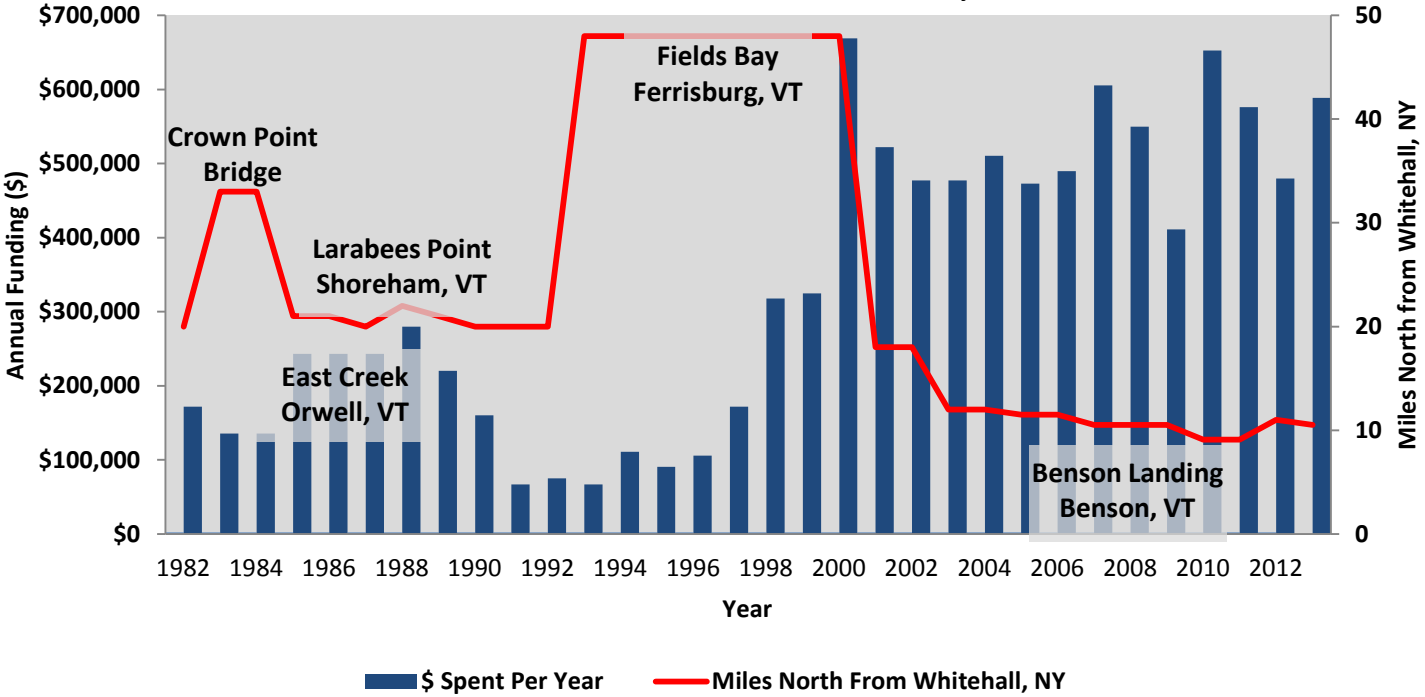


Vermont has many undeveloped lakeshores, especially on our smaller lakes. The Lakeshore Bill (H.526) would provide protection for this threatened resource. The Lakes and Ponds Management and Protection Program conducts scientific surveys of lakeshore conditions, provides education to property owners about good lakeshore management practices, and supports policies to protect Vermont's lakeshores.

Managing Aquatic Invasive Species

The aquatic invasive plant water chestnut was first confirmed in Southern Lake Champlain in the 1940s. The infestation can be controlled by mechanical harvesting and hand-pulling. Consistent funding over the last decade has allowed for notable progress in reversing the northward spread of the plant.

Lake Champlain Water Chestnut Management: Annual Funding vs. Miles North from Whitehall, NY



Dense mats of water chestnut limit boat traffic and recreational use, outcompete native plants and create an oxygen-depleted zone uninhabitable by aquatic organisms like fish.

Aquatic Invasive Species Spread Prevention …

Preventing the introduction of aquatic invasive species is critical to Vermont's ecological *and* economic health. **Vermont property values can decrease by as much as 16%** where Eurasian watermilfoil infestations are densest.[1]

VTDEC

VTDEC

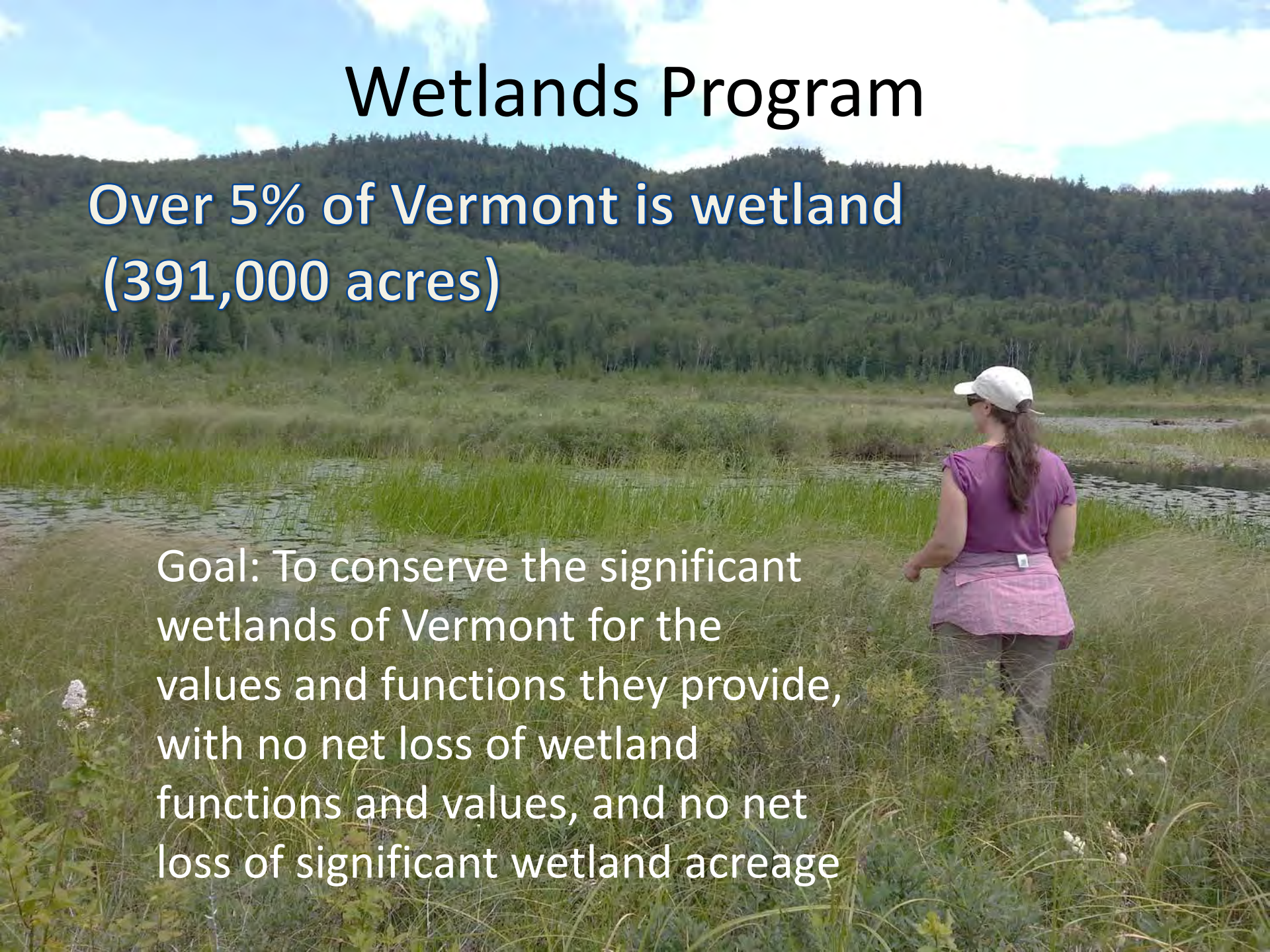
Public Access Area Greeter Program (2006-2012)

Year	# Boats Inspected	# Carrying Plant/Animal Material	% Carrying Plant/Animal Material
2006	2,916	50	1.7
2007	4,040	49	1.2
2008	4,598	27	0.6
2009	5,364	53	1.0
2010	8,337	190	2.3
2011	9,838	169	3.4
2012	17,557	152	4.1

Public Access Area Greeters educate lake visitors about invasive species, provide courtesy boat inspections, and can prevent the introduction of an aquatic invasive species.

[1] Condwen Zhang and Kevin Boyle, "The Effect of an Aquatic Invasive Species (Eurasian Watermilfoil) on Lakefront Property Values," *Ecological Economics* 70 (2010): 394–404.

Wetlands Program



Over 5% of Vermont is wetland (391,000 acres)

Goal: To conserve the significant wetlands of Vermont for the values and functions they provide, with no net loss of wetland functions and values, and no net loss of significant wetland acreage

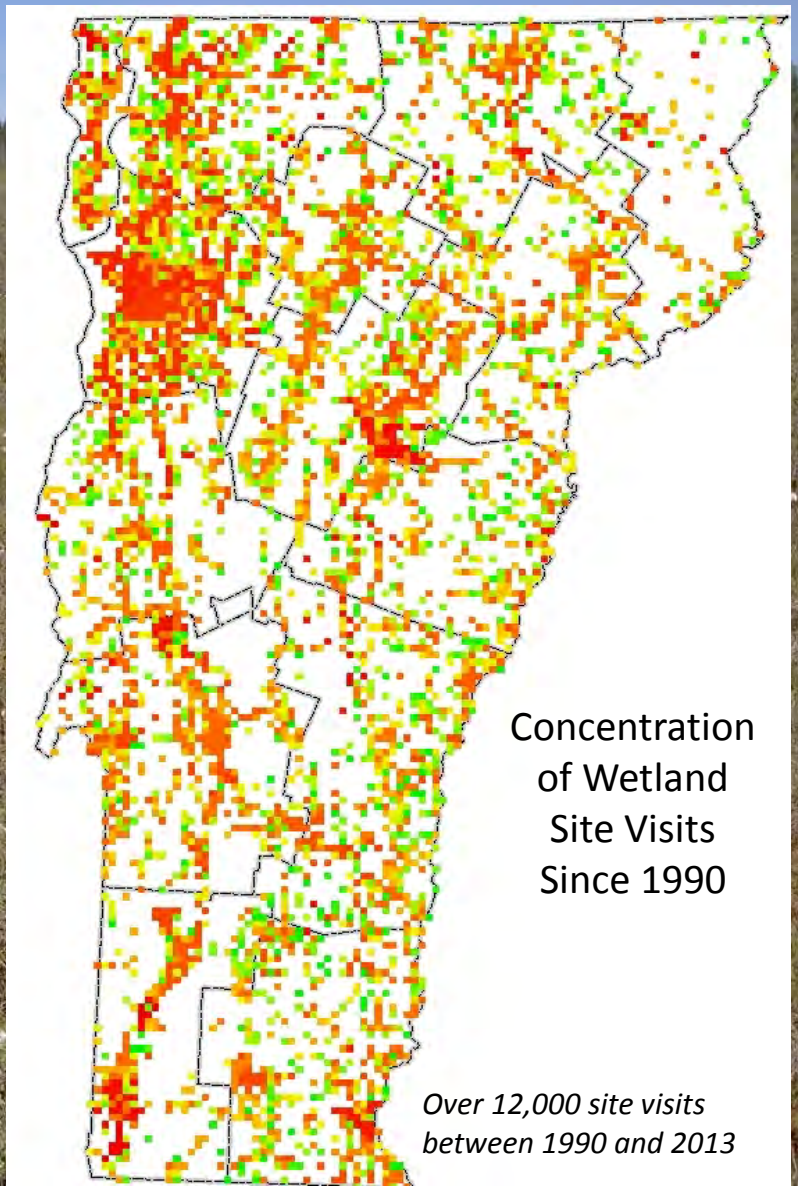
Wetlands Program

Number of site visits = avoidance and minimization of wetland impacts

- Over 600 site visits in 2013

No permits issued unless applicant demonstrated no loss of wetland function or value.

- 86 permits issued in 2013



VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Stormwater Management Program

The Watershed Management Division's Stormwater Management Program regulates stormwater runoff from construction activities, new impervious surfaces, industrial activities, concentrated animal feeding operations, large municipalities, and impervious surfaces in stormwater impaired watersheds.

Regulatory Programs and Thresholds Over Time

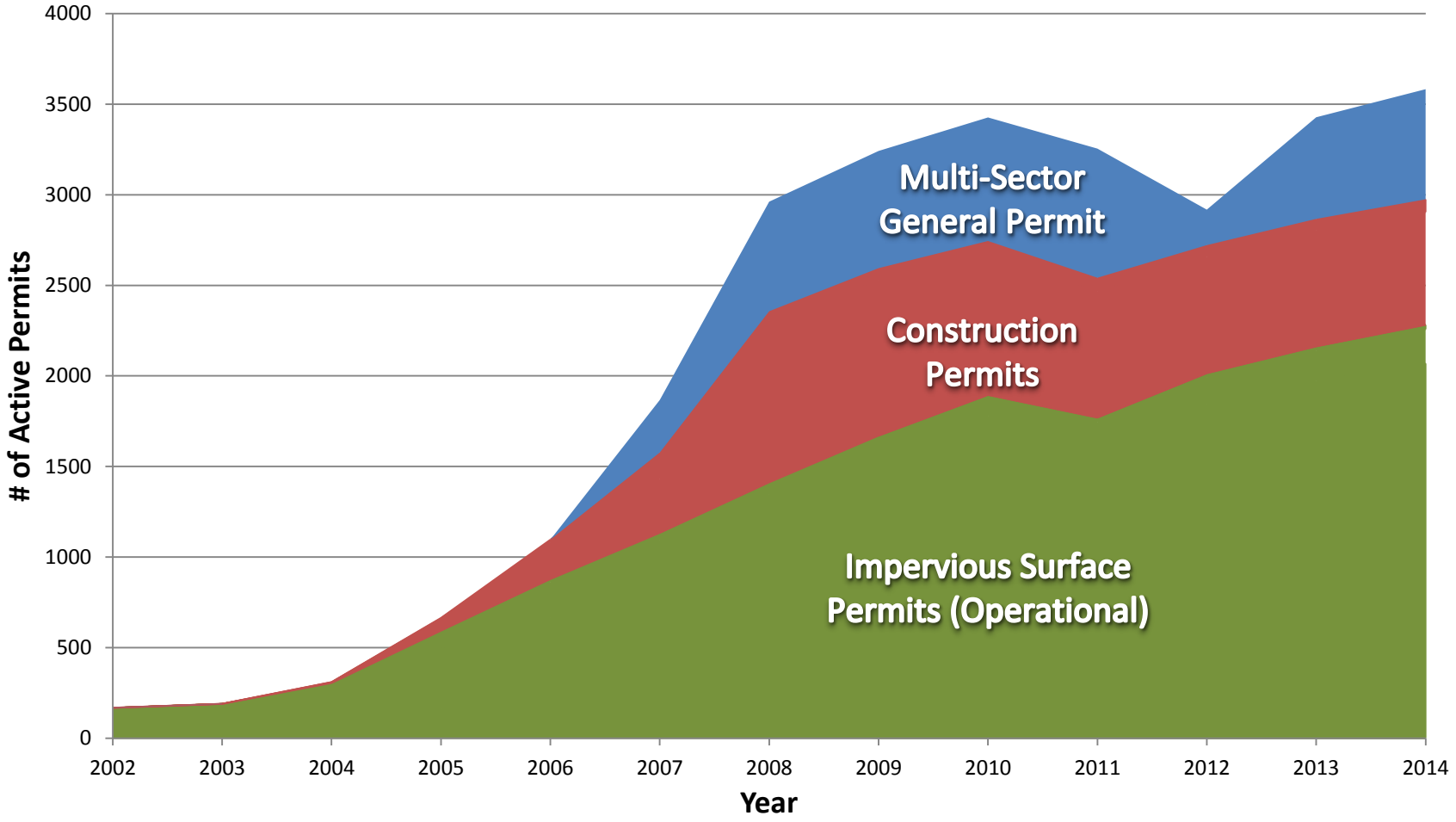
1980	State stormwater permitting commences	
1997	State stormwater permit threshold lowered	2 acres of impervious
1997	First Construction General Permit (CGP)	5 acres of disturbance
2003	Municipal Separate Storm Sewer System (MS4) Permit	Census designated municipalities (within Chittenden Co.)
2005	State stormwater permit threshold lowered	1 acre of impervious
2006	CGP threshold lowered	1 acre of disturbance
2006	First Multi-Sector General Permit (MSGP)	Categories of industrial activity
2009	First Residual Designation Authority (RDA) permit	Properties in stormwater impaired watersheds
2012	MS4 with stormwater TMDL implementation	Expanded to St. Albans & Rutland
2013	Concentrated Animal Feeding Operations (CAFO) General Permit	Medium and Large farms

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Stormwater Management Program

Total Active Permits Over Time

The number of active permits has increased over the last several years due to introduction of new permit programs and the lowering of jurisdictional thresholds. Authorizations issued for Multi-Sector or Operational coverage remain active as long as the industrial activity or impervious surface remains, so the number of these permits generally increase from year to year.

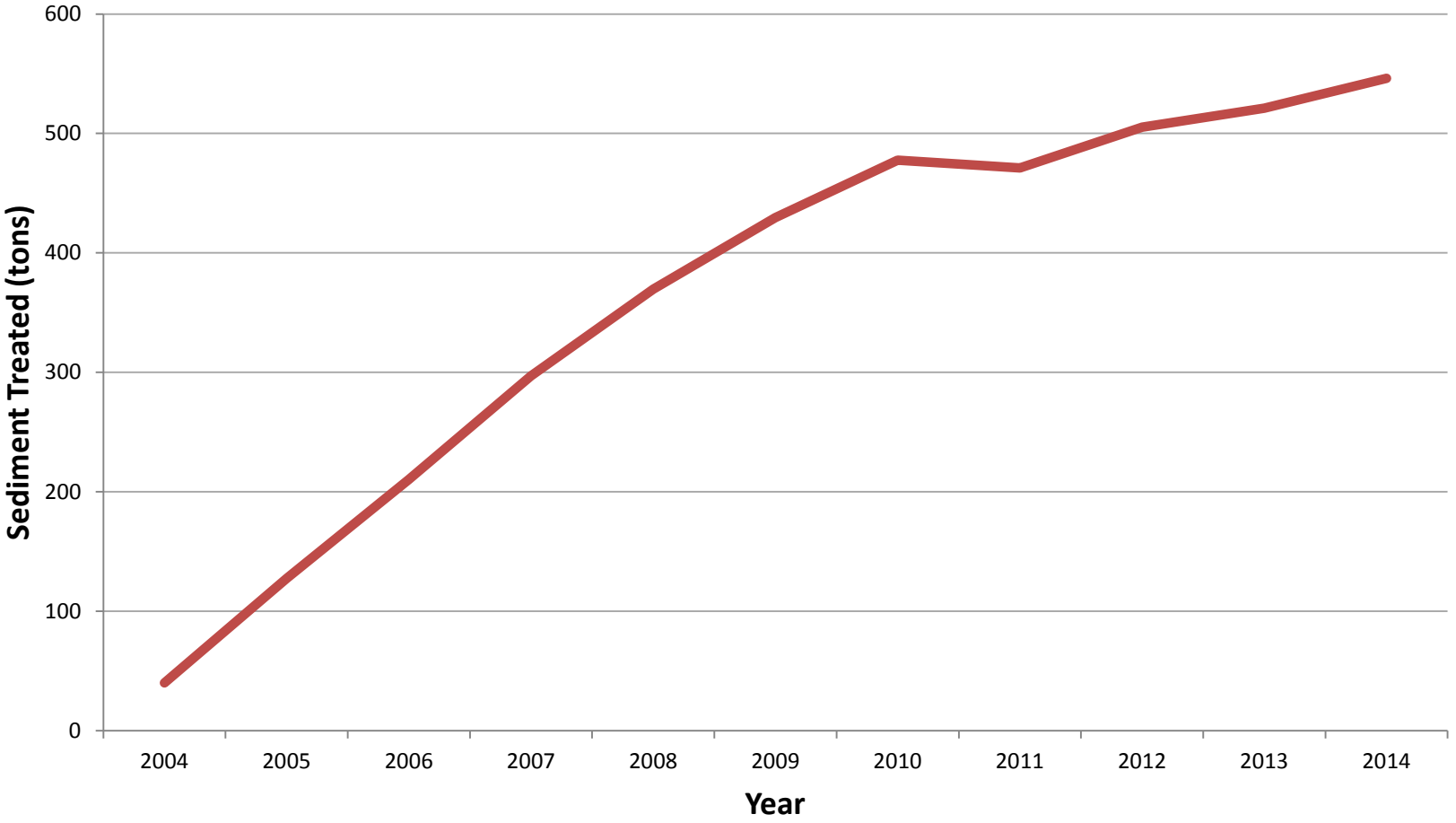


VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

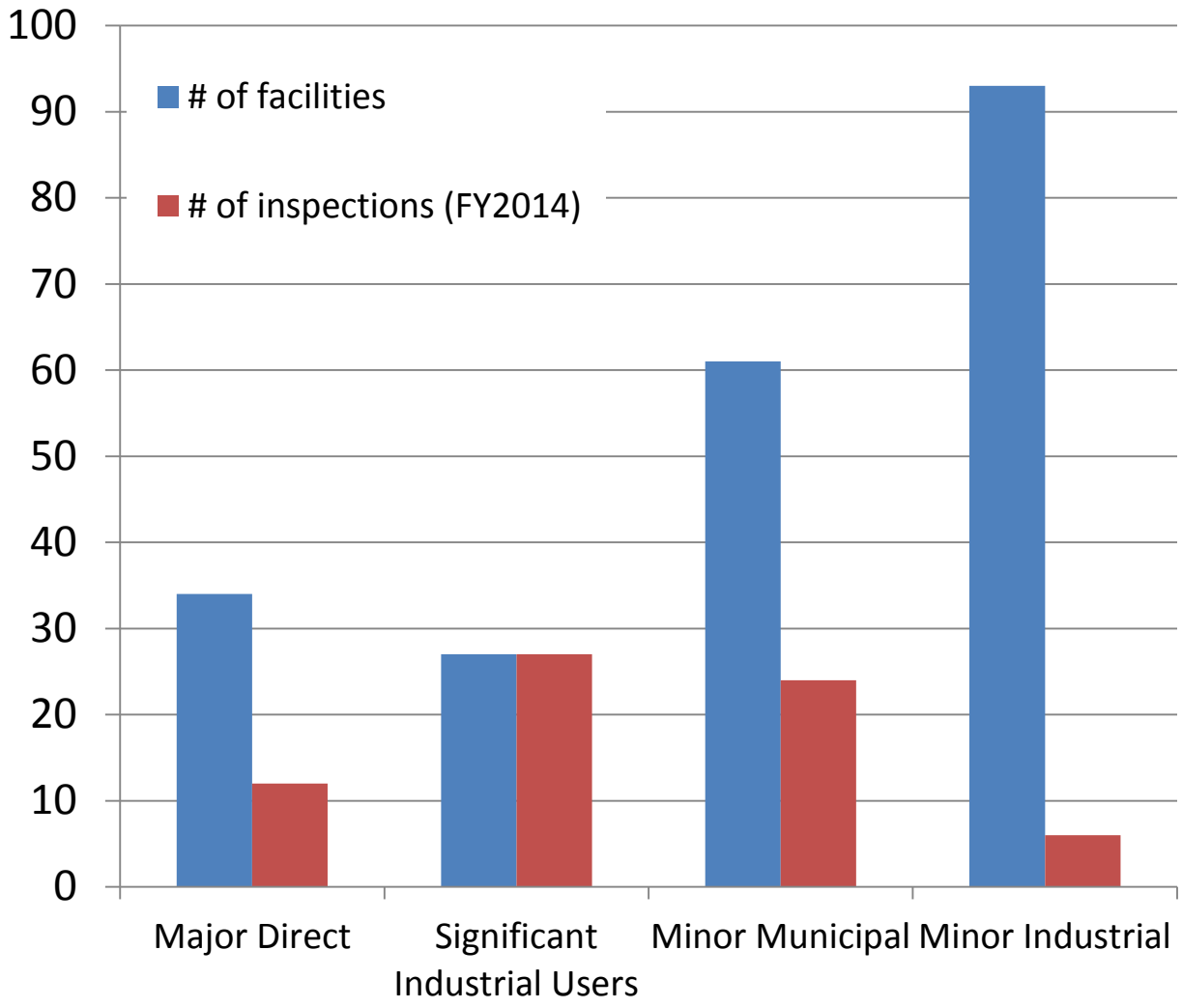
Stormwater Management Program

Sediment in urban runoff degrades aquatic habitat and carries attached pollutants and nutrients, such as phosphorus. By requiring treatment of runoff from impervious surfaces, the state stormwater program prevents an increasing amount of sediment from impacting our water resources every year.

Annual Sediment Removal Resulting from the State Permit Program



Wastewater Management Discharge Program



Residuals Management (Biosolids) Program

Program provides regulatory and technical oversight of the management of wastewater treatment biosolids, including

- septage
- wood ash
- short paper fiber
- some dairy wastes.

State and federal regulations provide for three basic means of management for biosolids:

- Landfilling
- Incineration
- application to the land as an agronomic supplement.

Land application of biosolids are effective in the reclamation of gravel pits, strip mines, and other areas where productive topsoil has been removed.

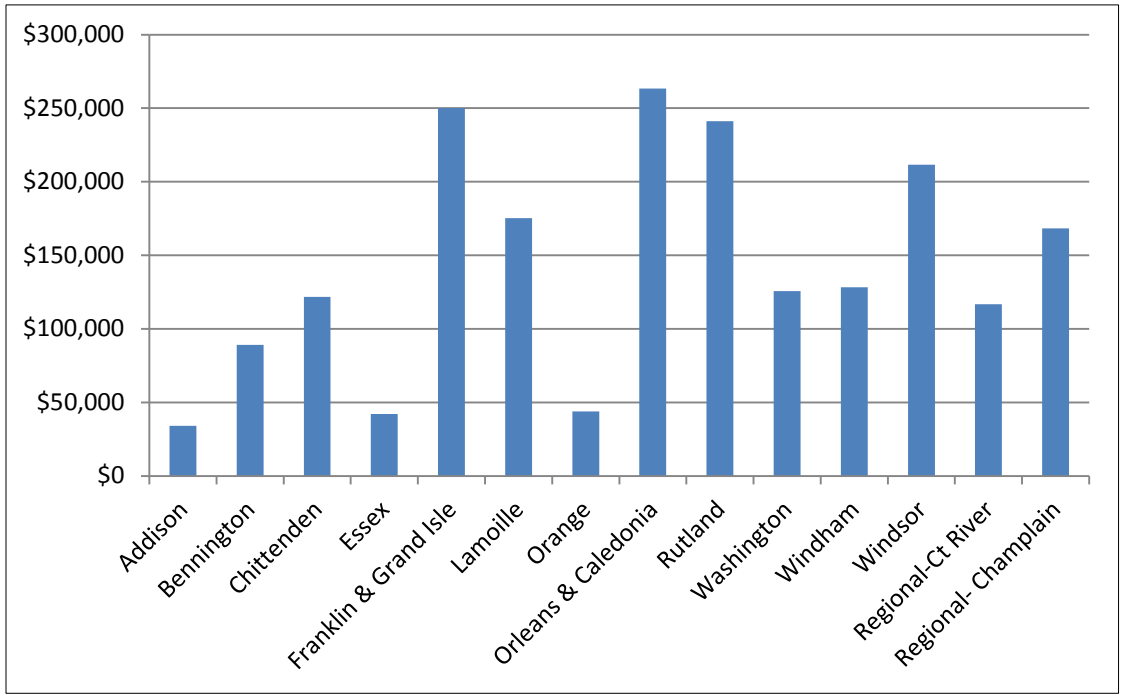
Ecosystem Restoration Program

Provides grants to municipalities and organizations
Targets polluted runoff & erosion - the leading cause of water quality degradation

Fiscal Year 2014 Grant Awards

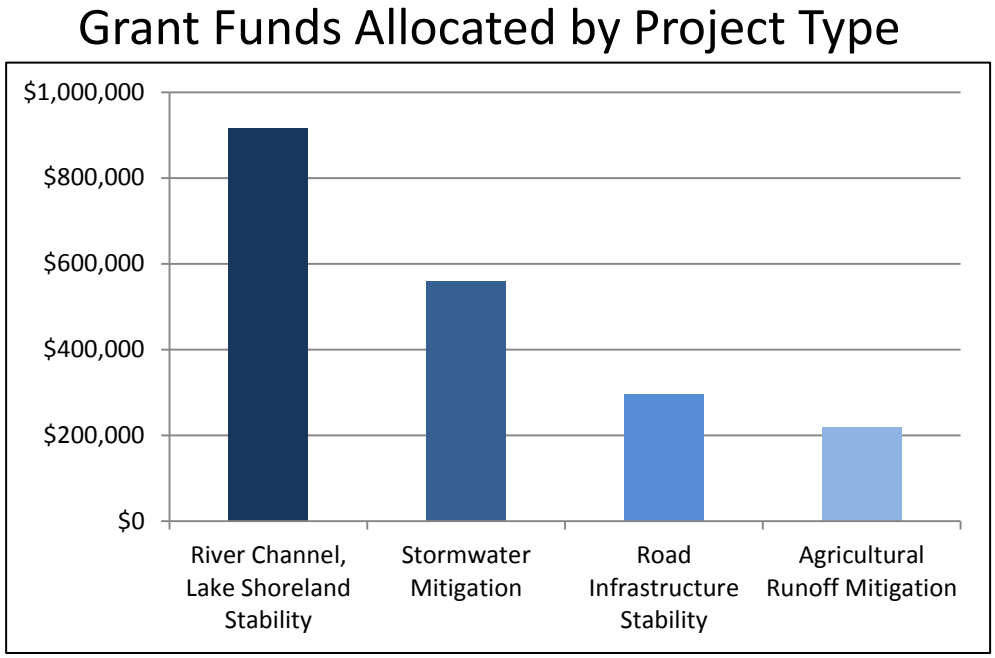
- Applying Tactical Basin Planning to target high priority projects
- 64 grants awarded
- Over $2 million in grant funds allocated across the State

Grant Funds Allocated by County or Regionally



Ecosystem Restoration Program

Fiscal Year 2014 Grant Awards (Continued)



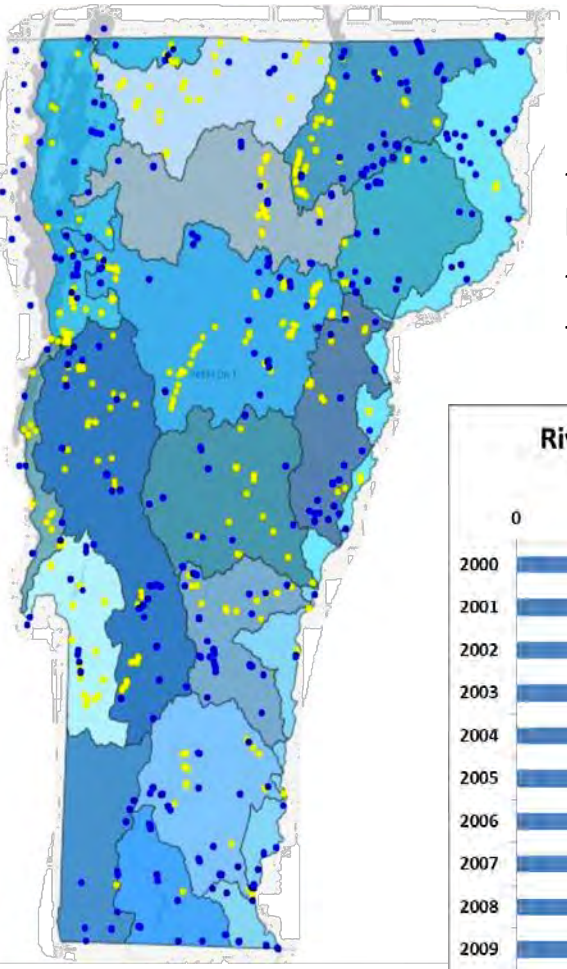
Improving road drainage, Randolph

Mitigating stormwater runoff, Hardwick

Restoring vegetated buffer, Woodstock

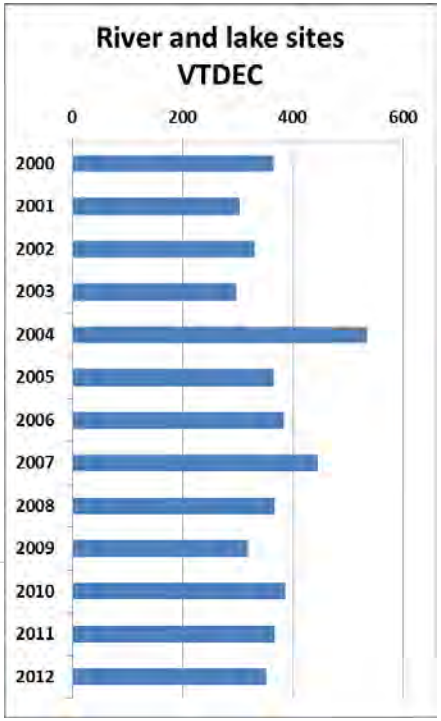
Water Quality Testing

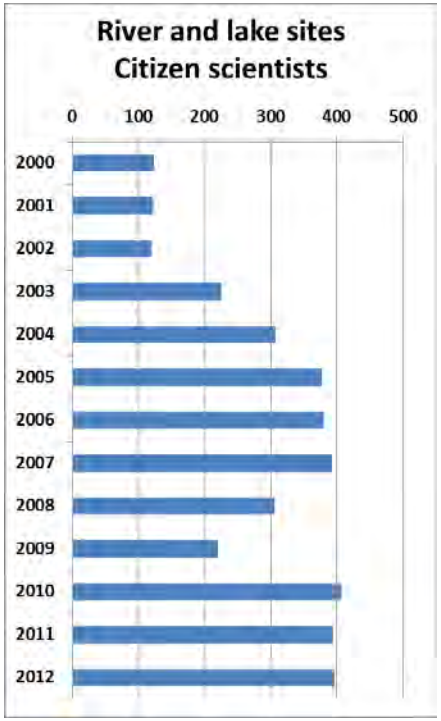
Vermont's water testing network is supported by VTDEC and volunteer citizen scientists, the LaRosa Environmental Laboratory. VTDEC (•) and citizens (•) sampled approximately 700 sites in 2012.



In 2013 this network supported:

-*TMDLs:* Lake Champlain, Lake Memphremagog, 16 ag. streams, 2 acid lakes.
-*Condition reports:* White R., Deerfield R., Lower CT R., statewide lakes.
-*Tactical Basin Plans:* Six plans issued.





Tactical Basin Plans Issued

Black-Ottauquechee
Memphremagog
Otter Creek
Winooski River
Missisquoi River
White River

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

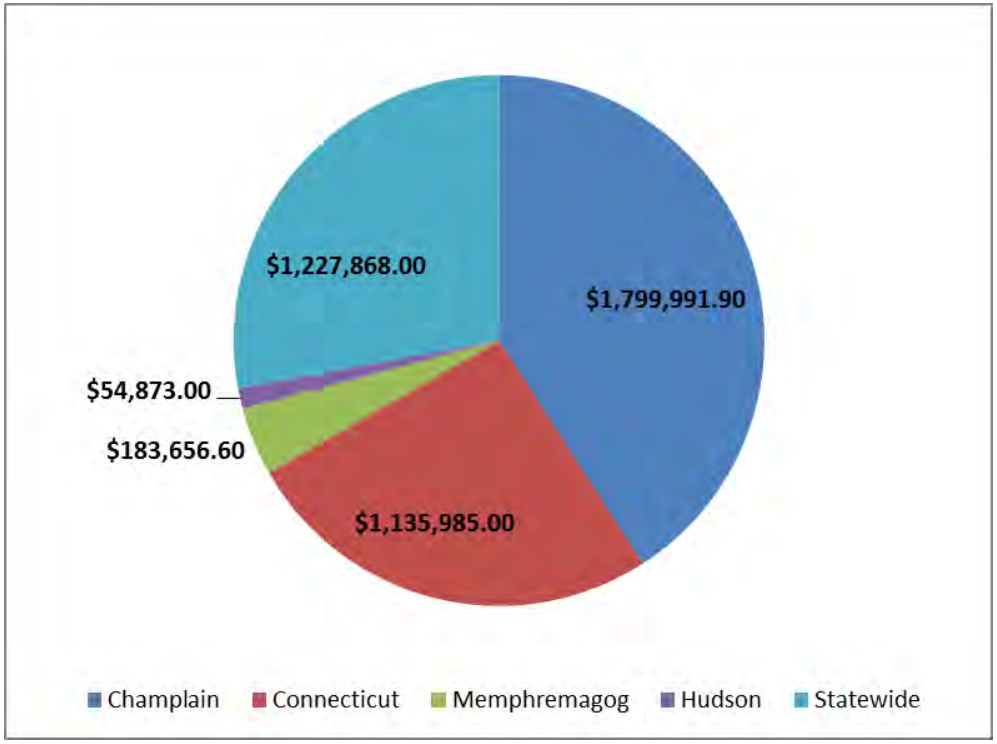
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

Tactical Basin Planning and Ecosystem Restoration

The Watershed Management Division's Tactical Basin Planning Process identifies high-priority opportunities for Ecosystem Restoration grant-funded actions, and for proactive protection efforts. In FY2013 and 2014, Tactical Plan priorities were translated into $4.4M of water quality improvement.

Tactical basin plans integrate priority stormwater, agricultural, road, river corridor, and forestry activities

FY 2013 and 2014 Grants by Watershed



The tactical planning process promotes partnerships with stakeholders, and allows the Division to transparently balance funding among watersheds to ensure pollution reduction is occurring statewide.

Drinking Water and Groundwater Protection Division

2015 Performance Measures

Division Mission

The Division protects human health and the environment for this and future generations by:

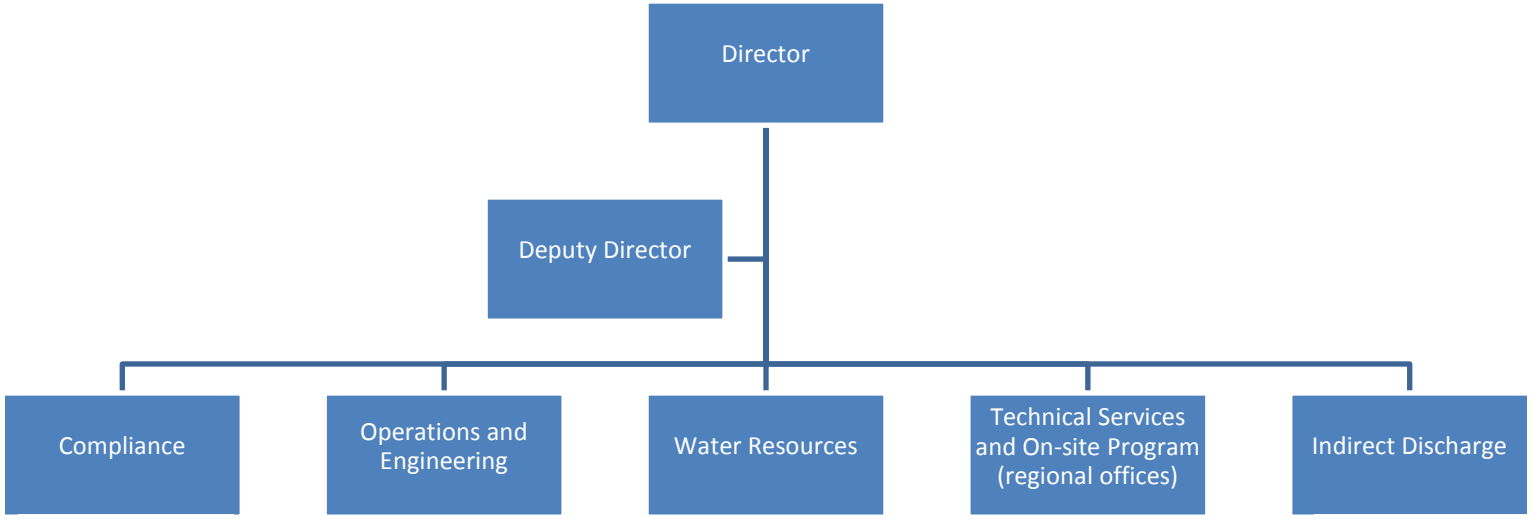
- protecting the quality and quantity of Vermont's groundwater resources;
- ensuring the proper operations & management of Vermont's drinking water supplies; and
- regulating those wastewater disposal activities that could adversely affect groundwater.

This mission is met through outreach, education, assistance, and regulatory activities.

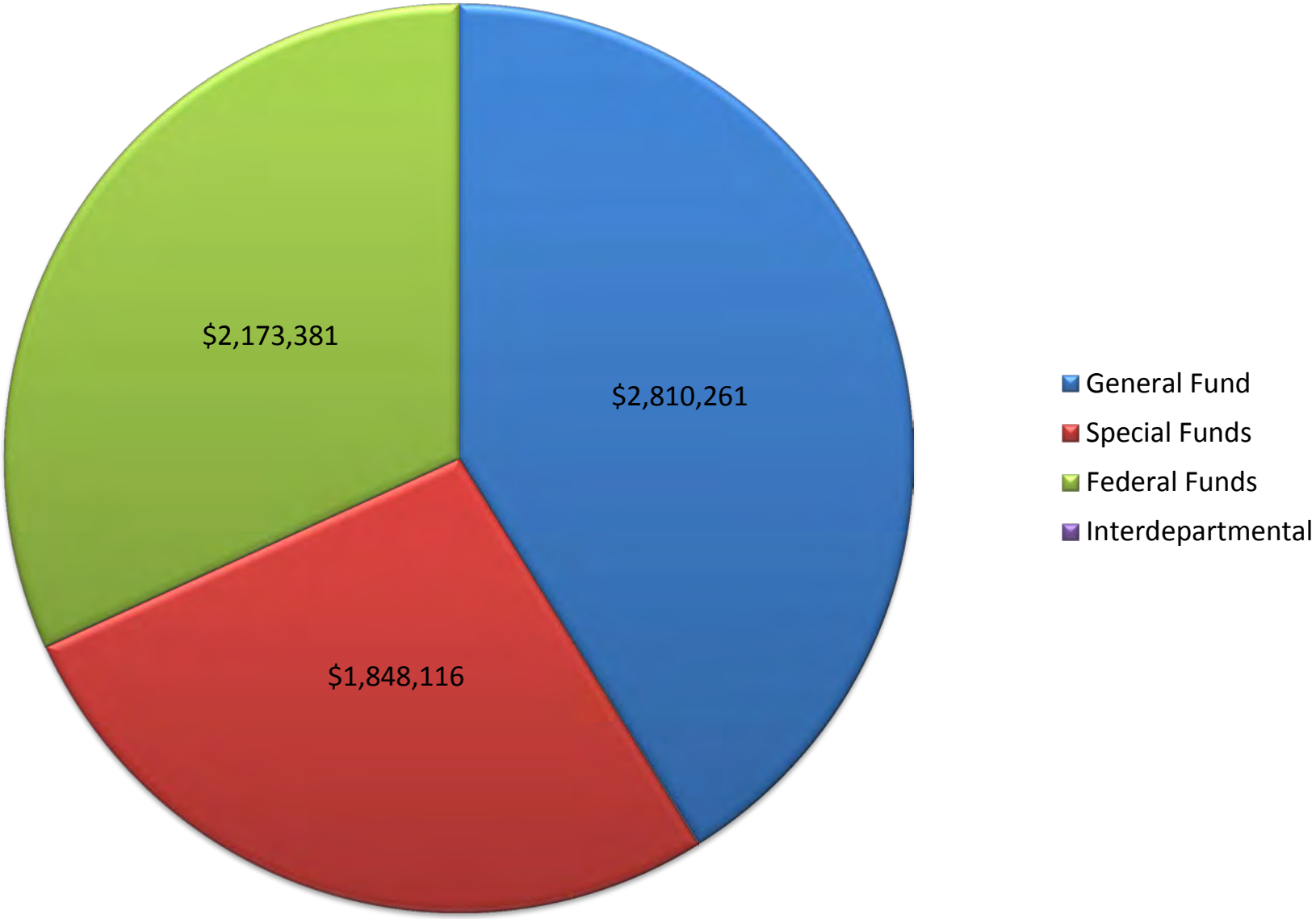
Description of Work

- Permitting
- Compliance & Enforcement
- Licensing
- Outreach & Education

Drinking Water and Groundwater Protection Division



DEC Drinking Water Groundwater Protection Division
FY2014 Budget By Major Funding Source



DWGWP Division Permit Programs

- Drinking Water Program

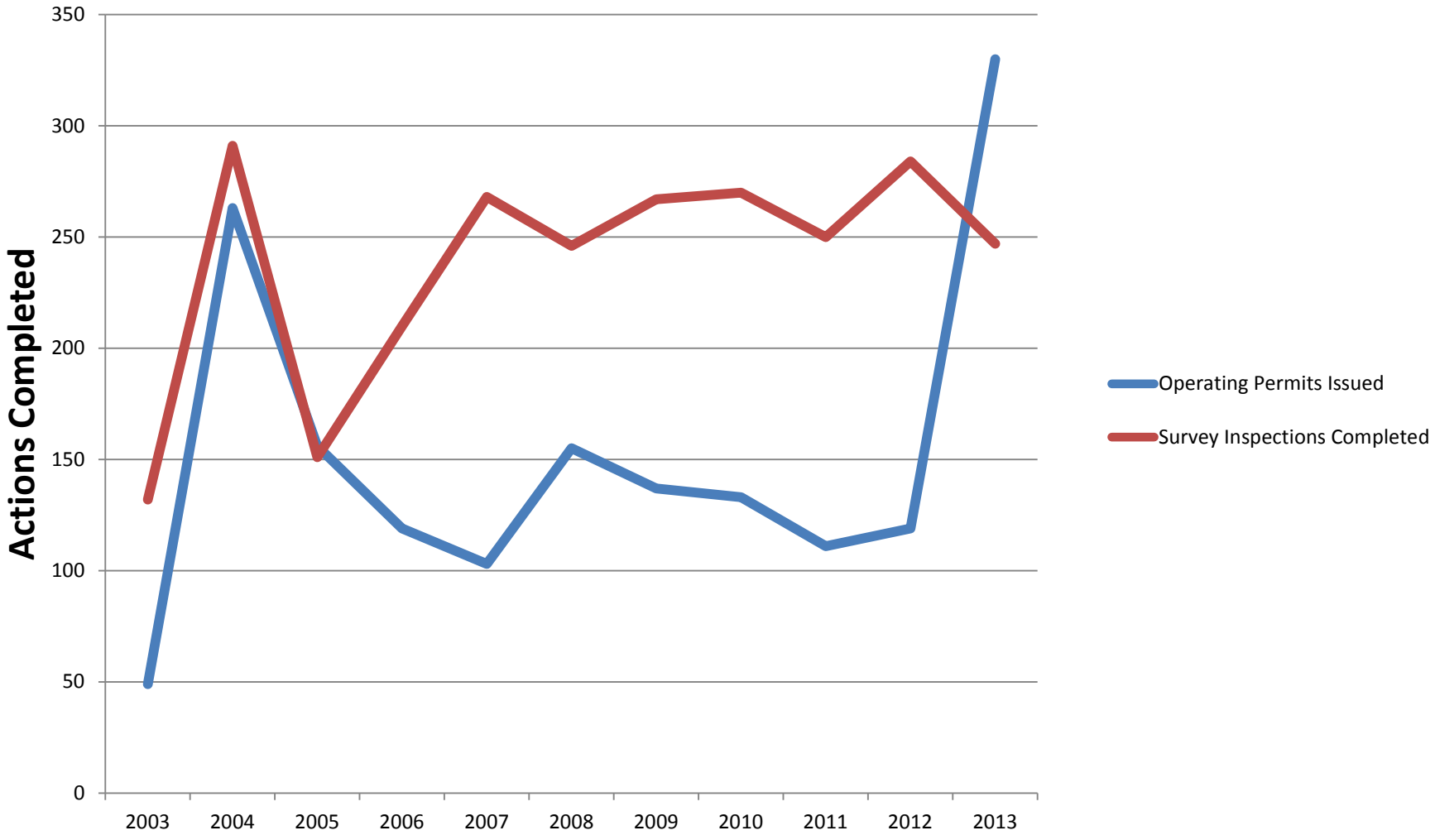
  - Source water permits
  - Construction permits
  - Operating permits
  - Groundwater withdrawal permits

- Indirect discharge permits

- Underground injection control permits

- Water/Wastewater permits

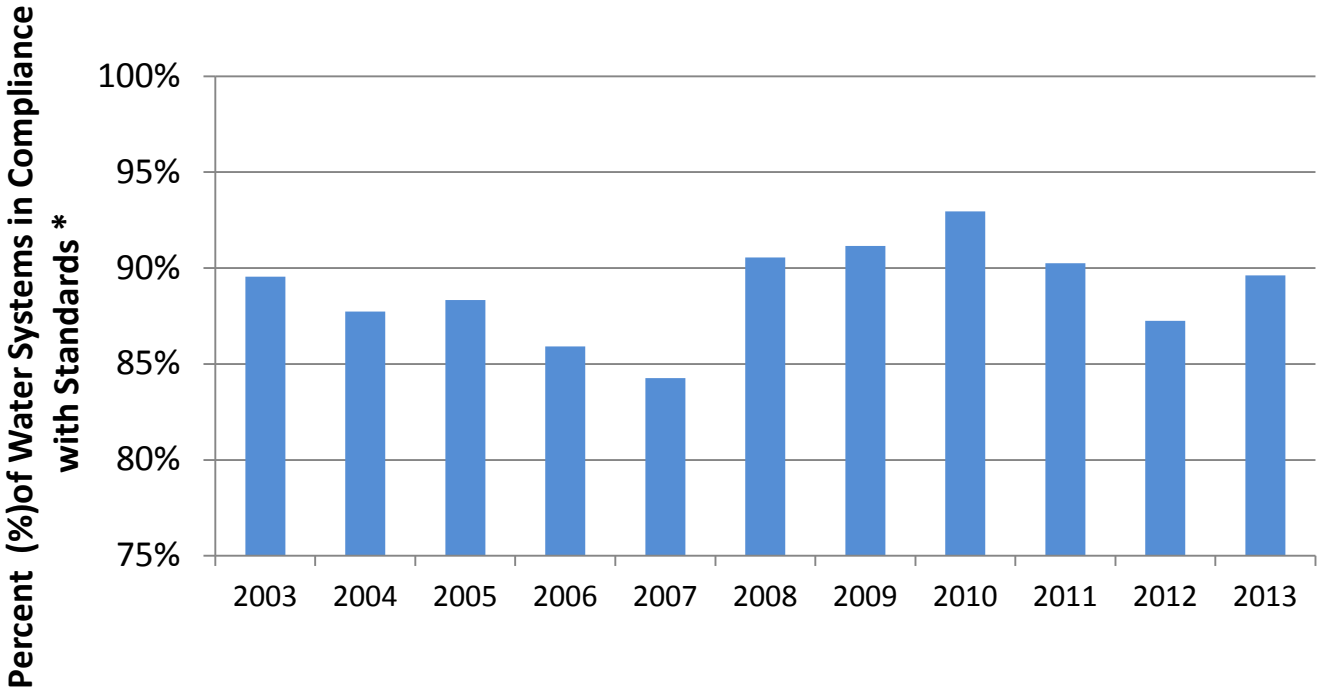
Public community & Non-transient Non-community (NTNC) Water Systems



DWGWP Division Compliance & Enforcement

- Review of submitted monitoring data
- Technical Assistance
- Inspections
- Notices of Alleged Violation
- Enforcement referrals

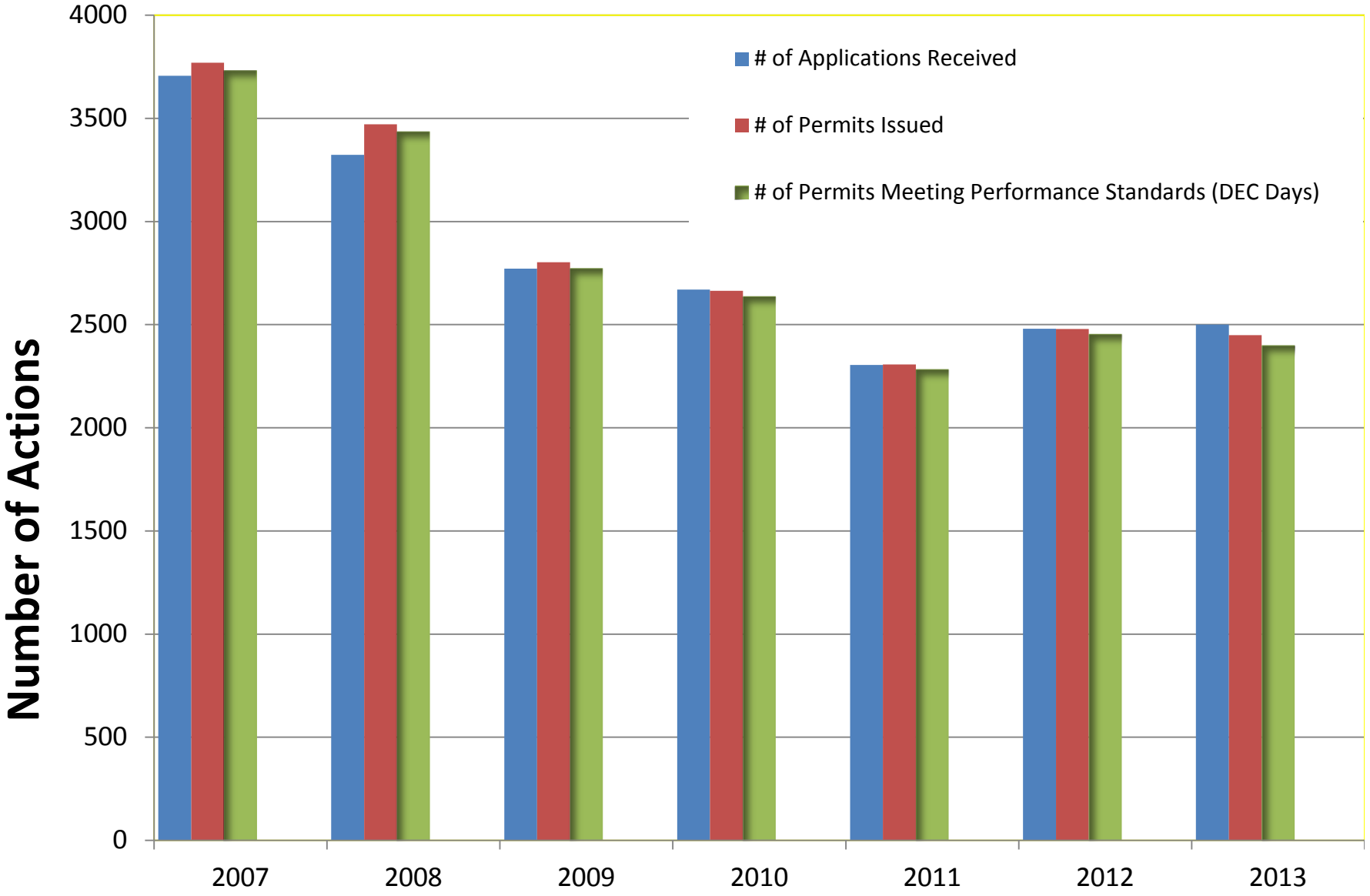
Compliance with Health Based Standards
Public Community and Public Non-Transient Non-Community Systems



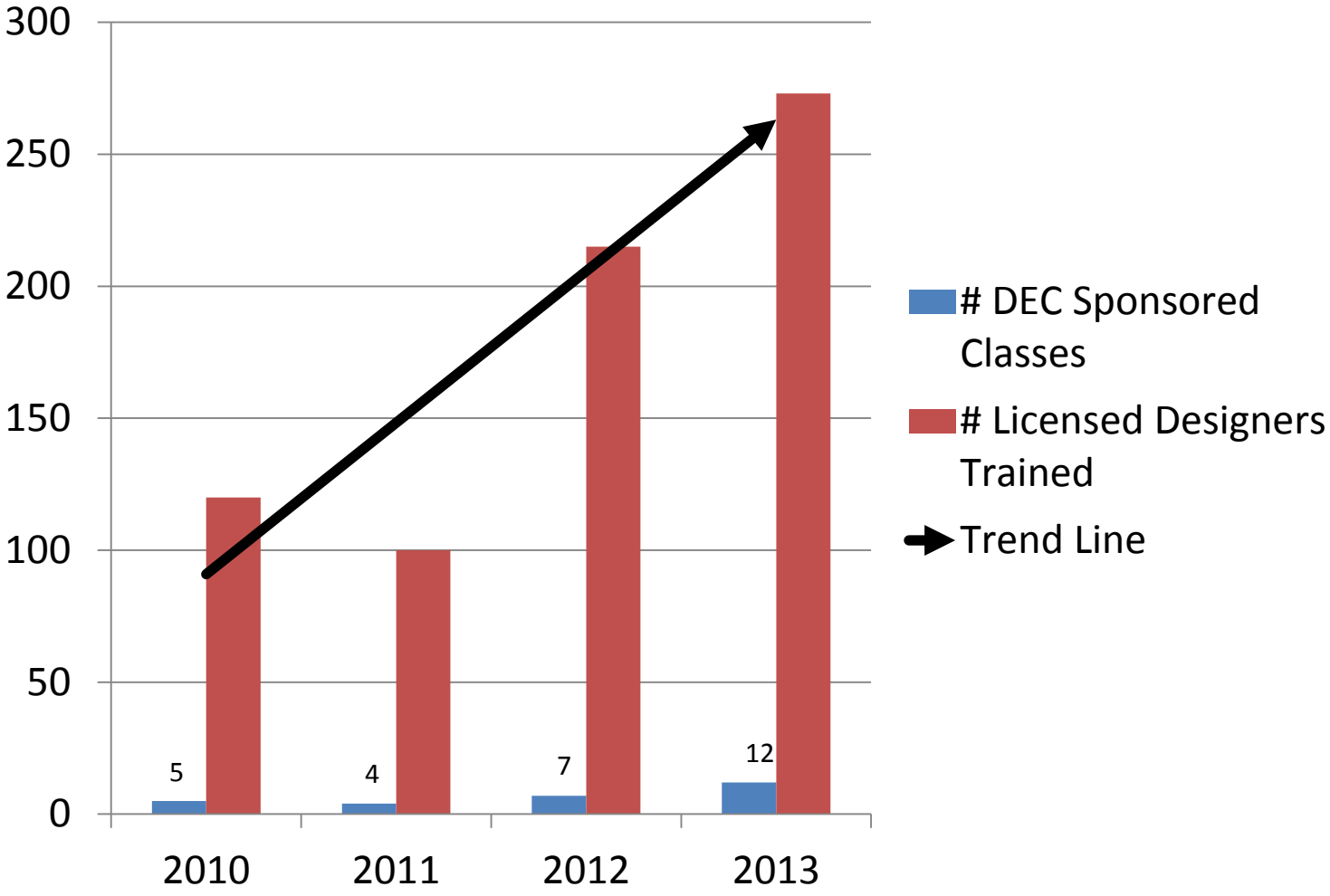
Public community water system means a public water system which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least 25 year-round residents

Public non-transient non-community water system means a public water system that regularly serves at least 25 or more of the same persons daily for more than six months per year. Examples include: schools, factories, office buildings.

Regional Office Wastewater System & Potable Water Supply Permits



Licensed Designer Program Education Opportunities



Indirect Discharge Program

- Program regulates indirect discharges of sewage (≥6,500 gpd)

- New VT statute in 1986 affected future proposed indirect discharges:

  - Must meet a biological standard in receiving stream. No significant change to aquatic biota allowed
  - Clear & convincing evidence required

Indirect Discharge Program

- Challenge: How can you permit a development before it is built and ensure that the discharge meets that standard and the stream water quality is protected?

Indirect Discharge Permit Program Assessment

100% SUCCESS

During the period 2000-2013 there were 71 stream assessments made and all 71 met the requirements of the Indirect Discharge Rules.

Air Quality & Climate Division (AQCD) 2015 Program Performance Measures

Division Mission

Pursuant to 10 VSA §551, the AQCD's mission is to:

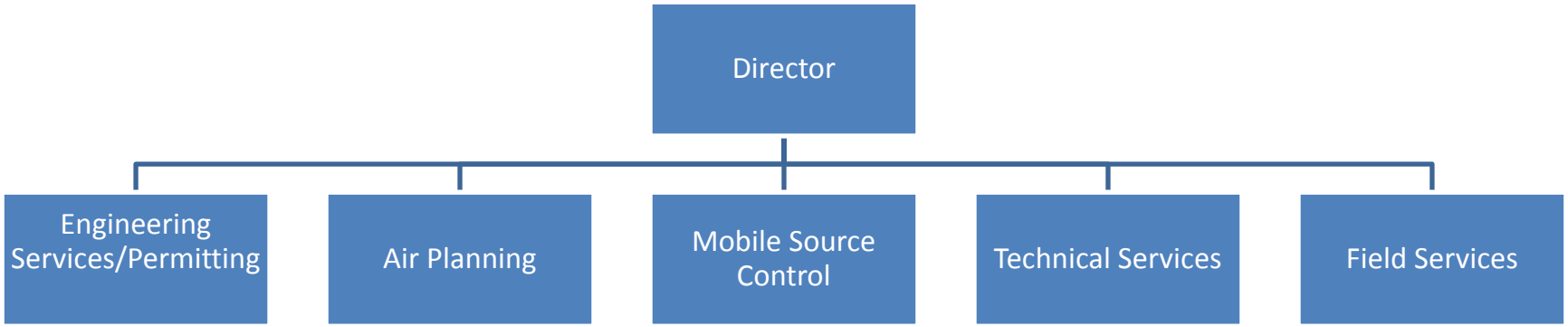
- Achieve and maintain air quality levels that protect human health;
- Prevent injury to plant, animal life and property;
- Promote economic and social development; and
- Facilitate the enjoyment of Vermont's natural attractions.

Description of Work

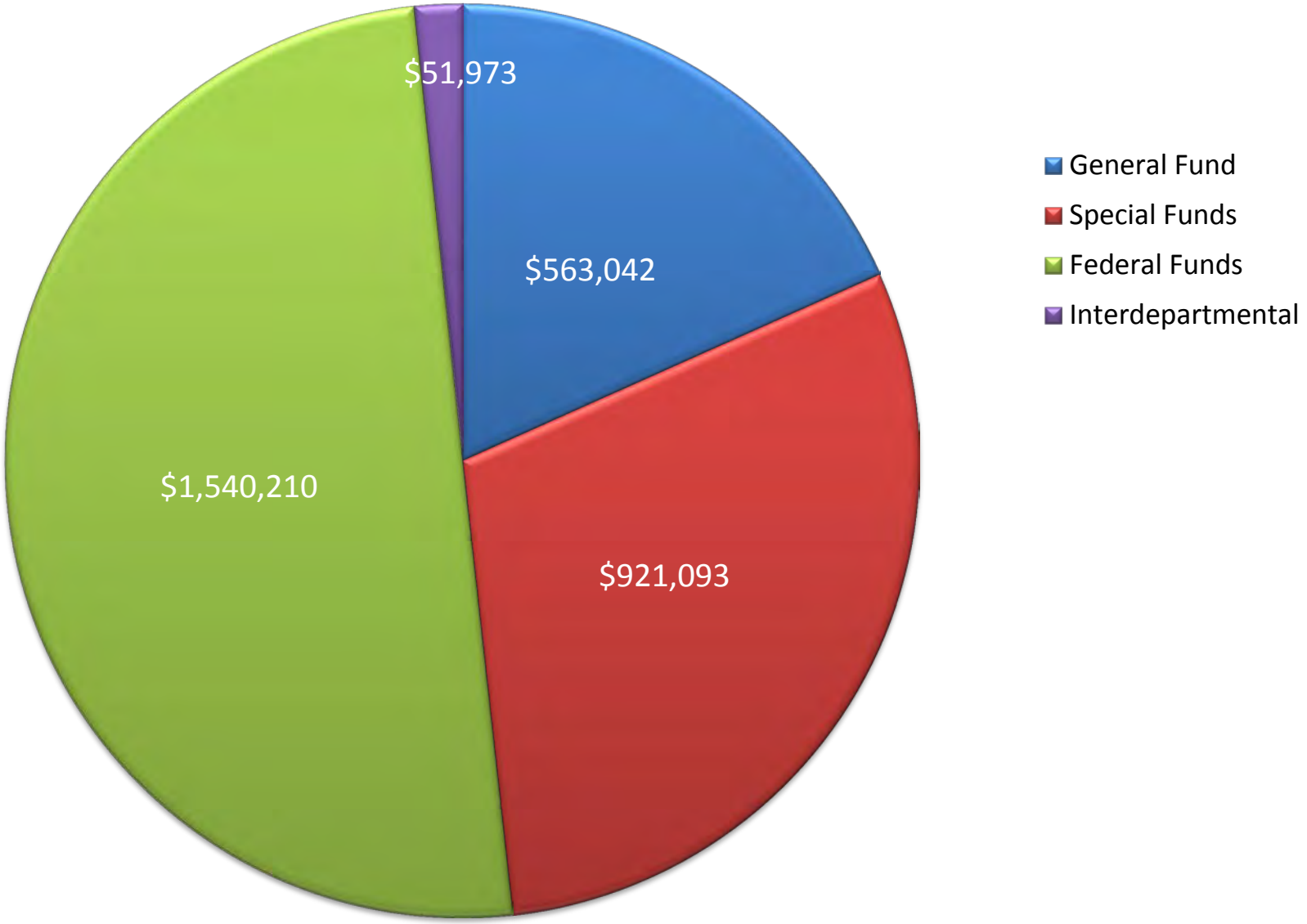
To carry out the AQCD's mission, the AQCD:

- Operates five monitoring sites where air samples are collected to determine compliance with ambient air quality standards for criteria pollutants and air toxics;
- Inventories Vermont's emissions of criteria pollutants, air toxics, and greenhouse gases;
- Develops and implements programs to control air pollution from stationary sources and mobile sources in Vermont and conducts inspections to ensure compliance; and
- Works closely with other states and entities to develop regional and national air pollution control strategies and to address the interstate transport of pollution, which significantly impacts Vermont's air quality.

Air Quality and Climate Division

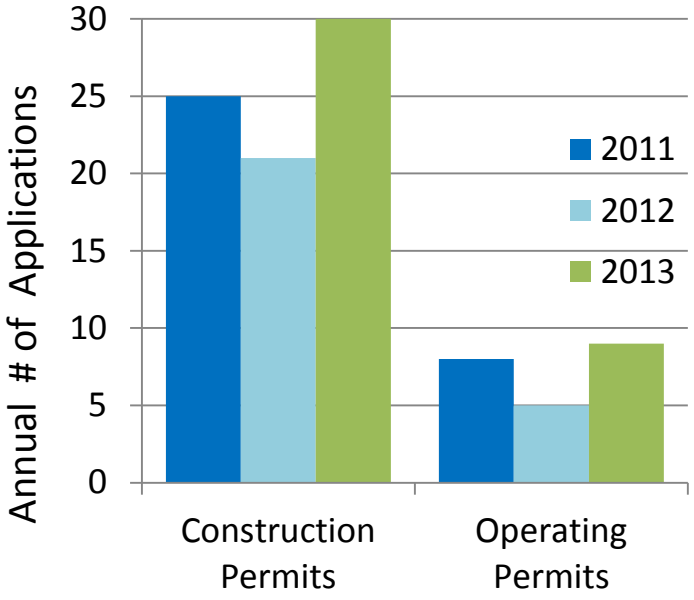


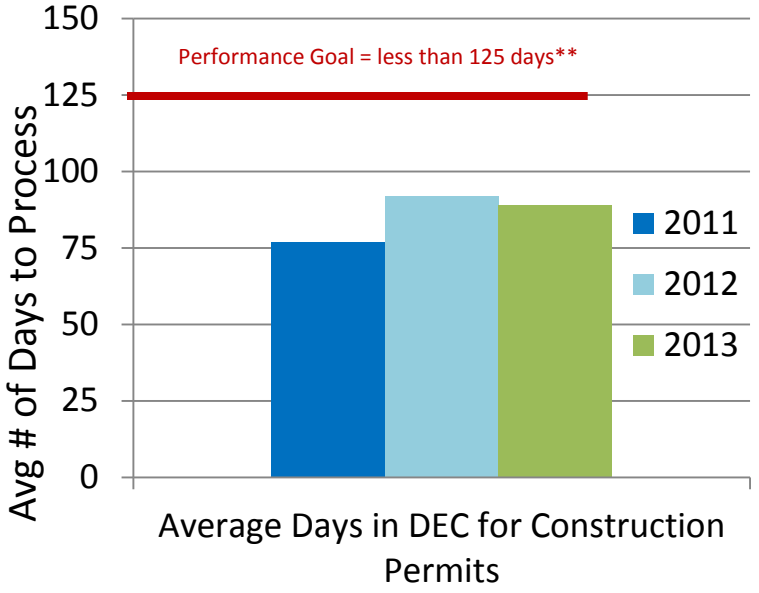
DEC Air Quality and Control Division
FY2014 Budget By Major Funding Source



Permitting Approvals

AQCD – Construction and Operating Permits*





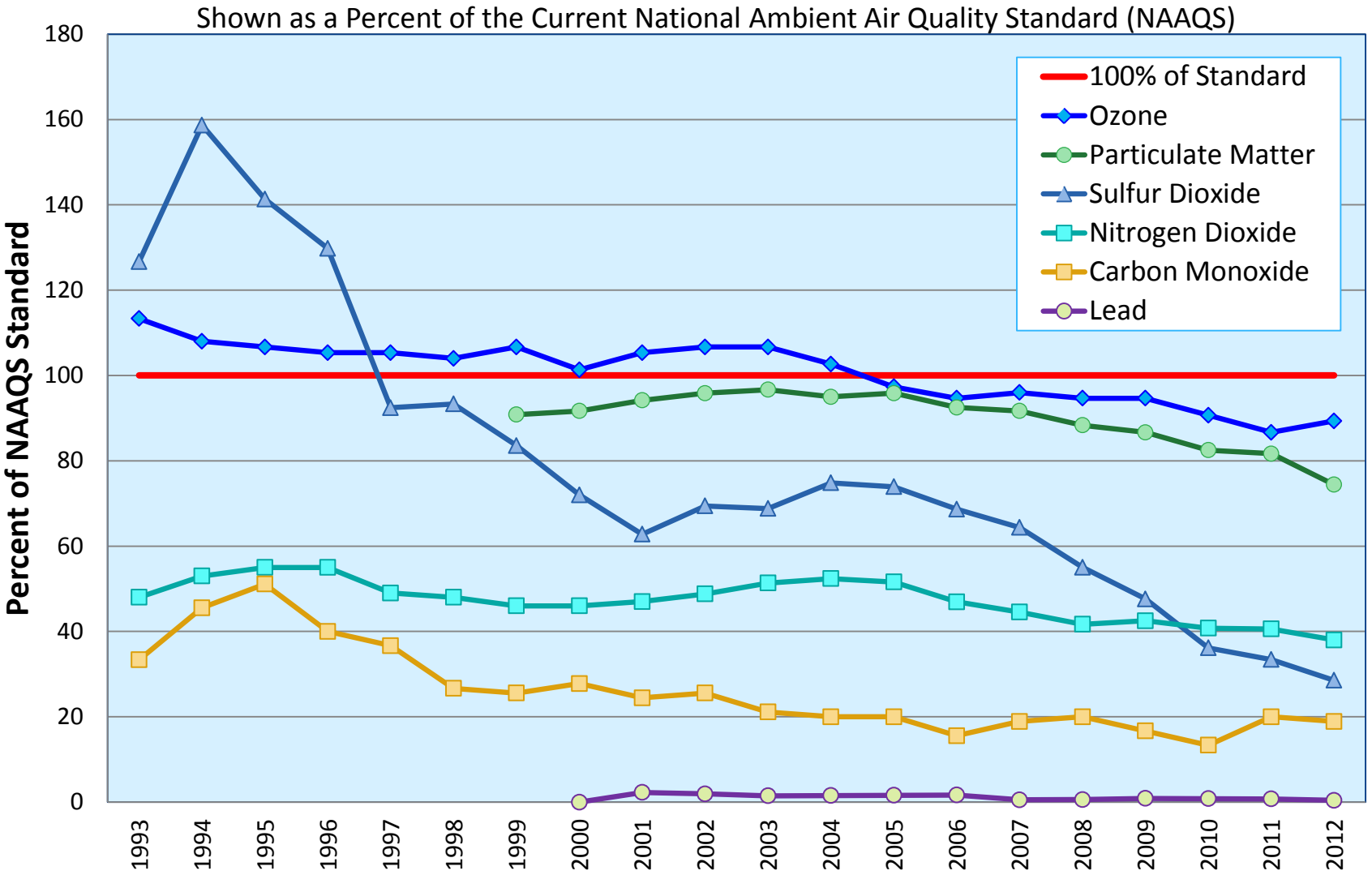
- The AQCD issues two types of permits: (1) Construction Permits, which are required for new or modifying sources before they can commence changes, and (2) Operating Permits, which are renewed every five years to incorporate any new requirements adopted in the interim. Whenever possible, these permits are combined into one.

** For Construction Permits, performance goals range from 80 days for minor permits with no public comment to 175 days for major sources with public comment. In 2013, 73% of construction permit projects met their goal.

Compliance and Enforcement

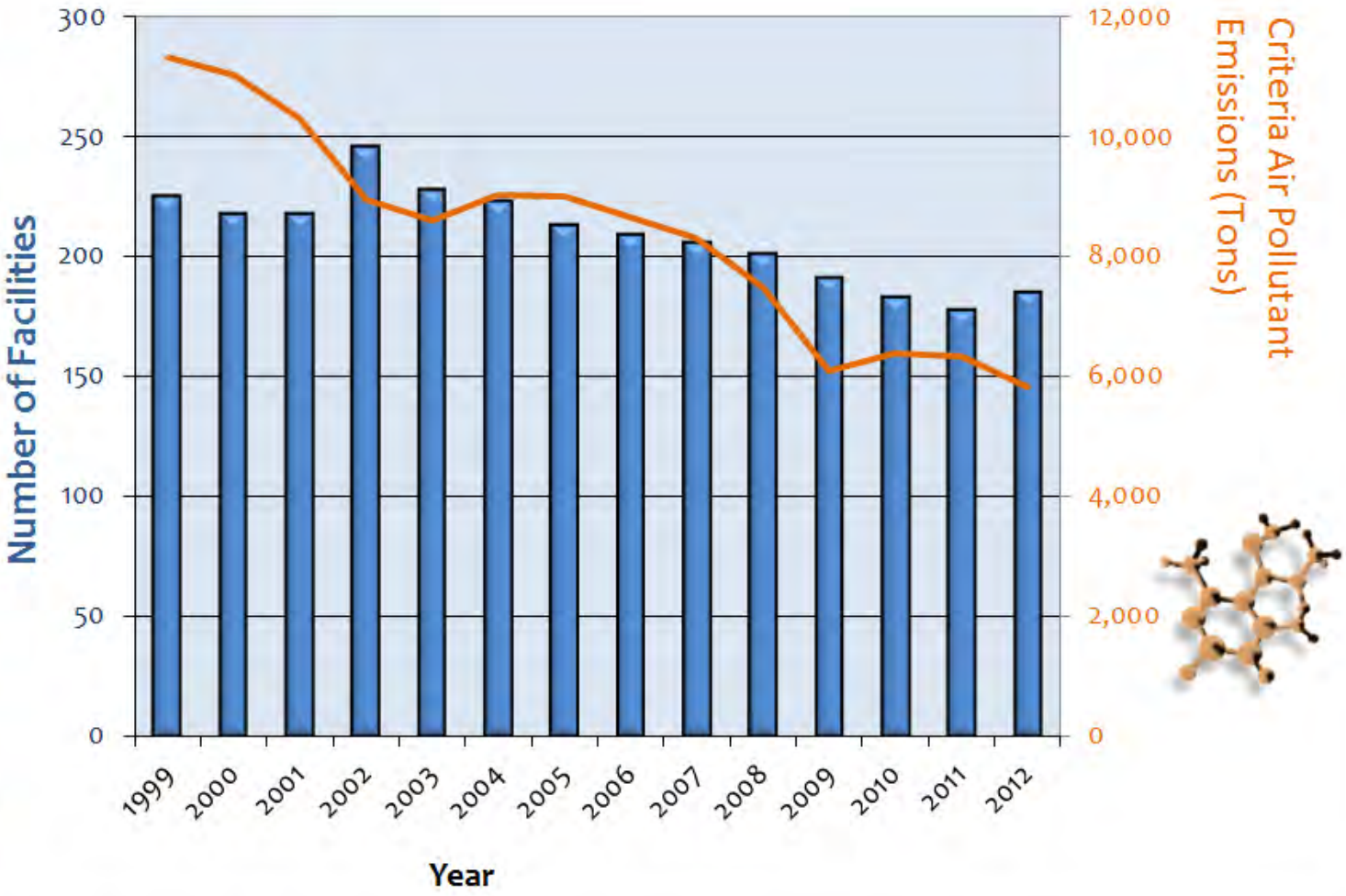
Performance Measure	2012	2013
• General Engineering Compliance Inspections	45	33
• Open Burning Permits Issued	30	23
• Review of CEMS/COMS Excess Emissions Reports from Stationary Sources	20	20
• Stack Testing Observations and Report Reviews	9	13
• Complaints Addressed	35	41
• Enforcement Actions Referred to Compliance and Enforcement Division for Prosecution	5	6

Ambient Air Quality Trends for Criteria Pollutants in Vermont



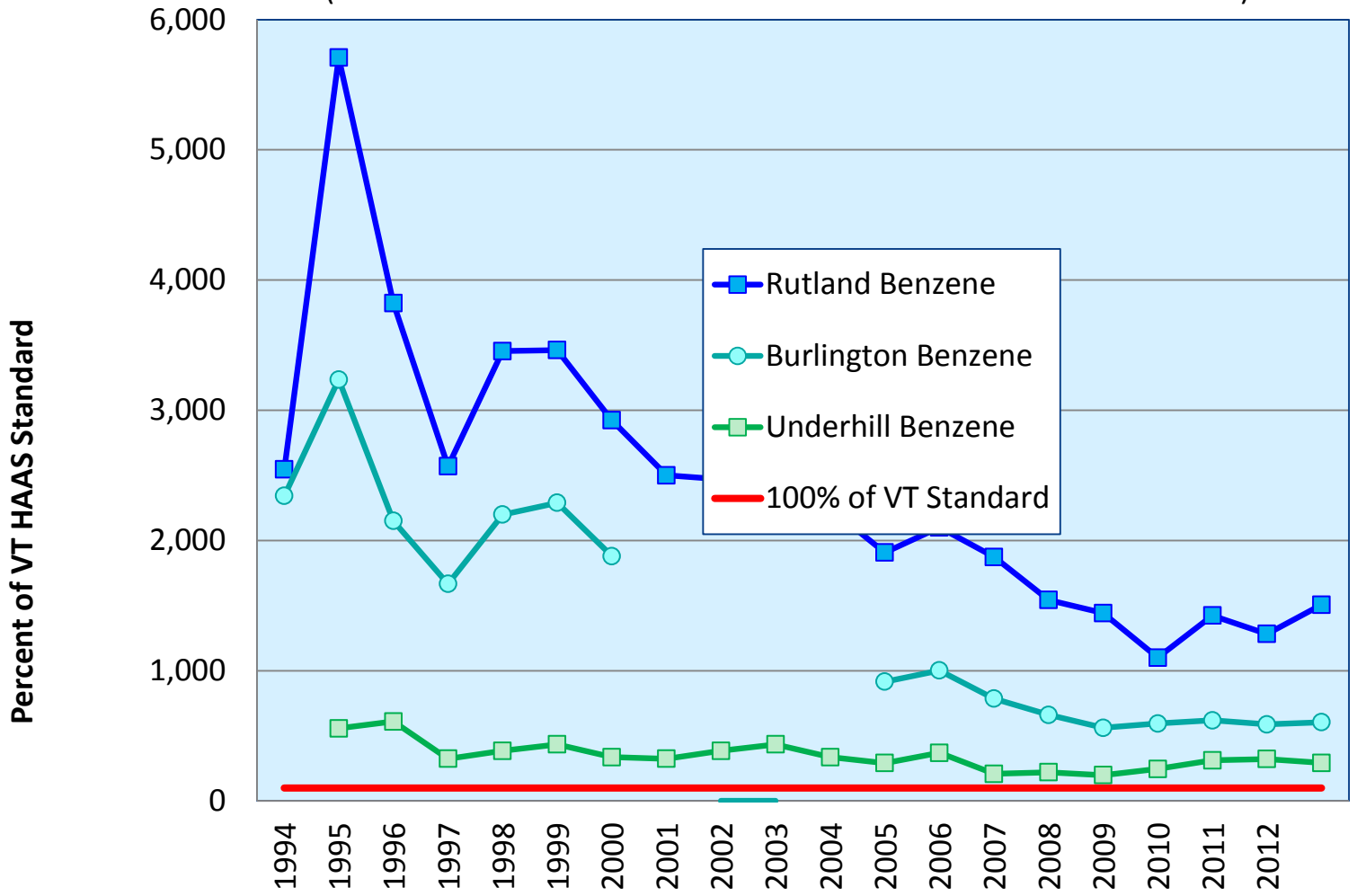
This performance measure indicates that Vermont's measured ambient air concentrations for the six "criteria" pollutants have generally been declining over time, and all of Vermont is currently "in attainment" with EPA's NAAQS.

Number of Registered Stationary Sources in Vermont and Associated Emissions of Criteria Air Pollutants



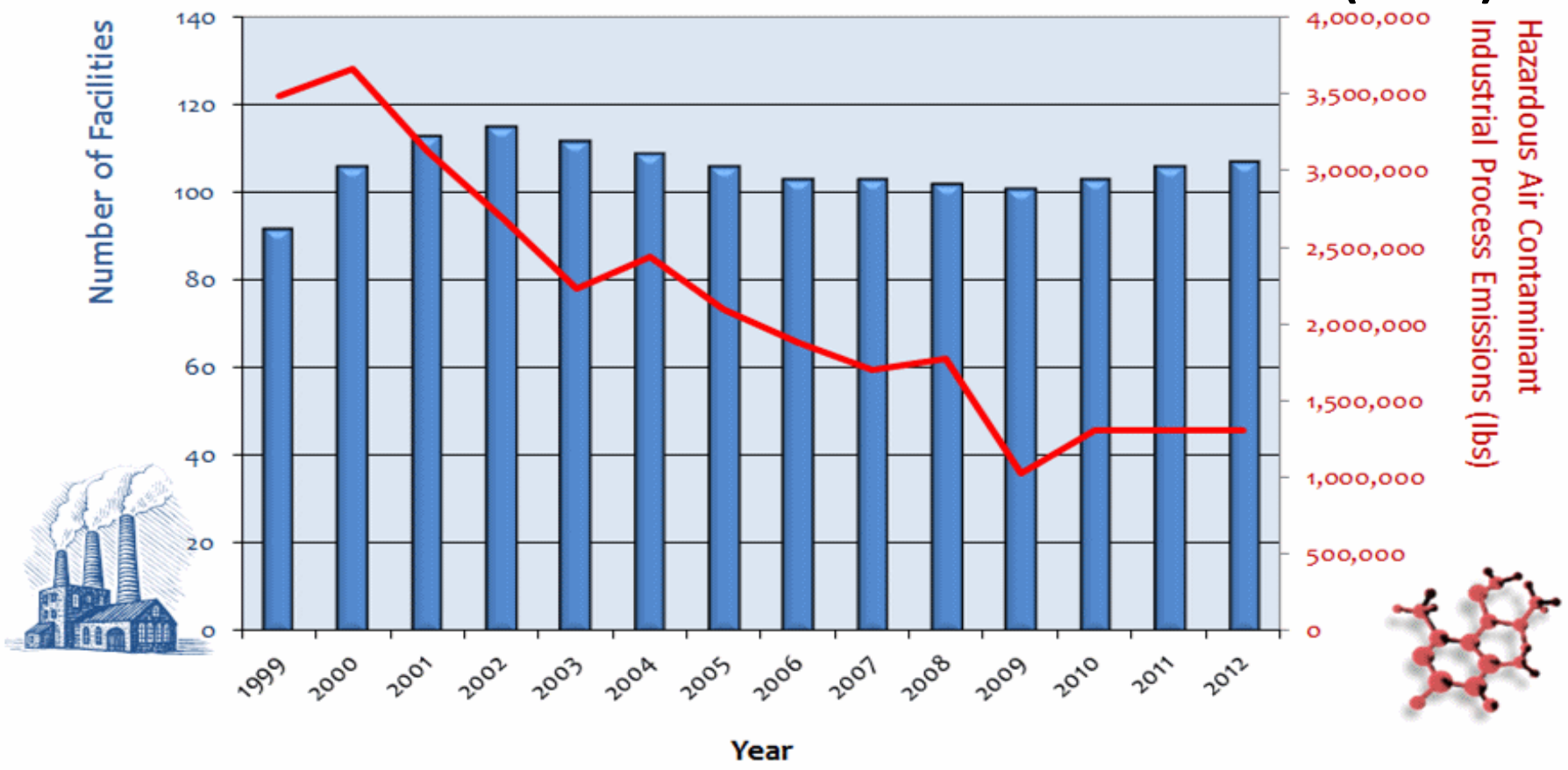
Ambient Air Quality Trends for Benzene in Vermont

(Shown as a Percent of Current VT Hazardous Ambient Air Standard)

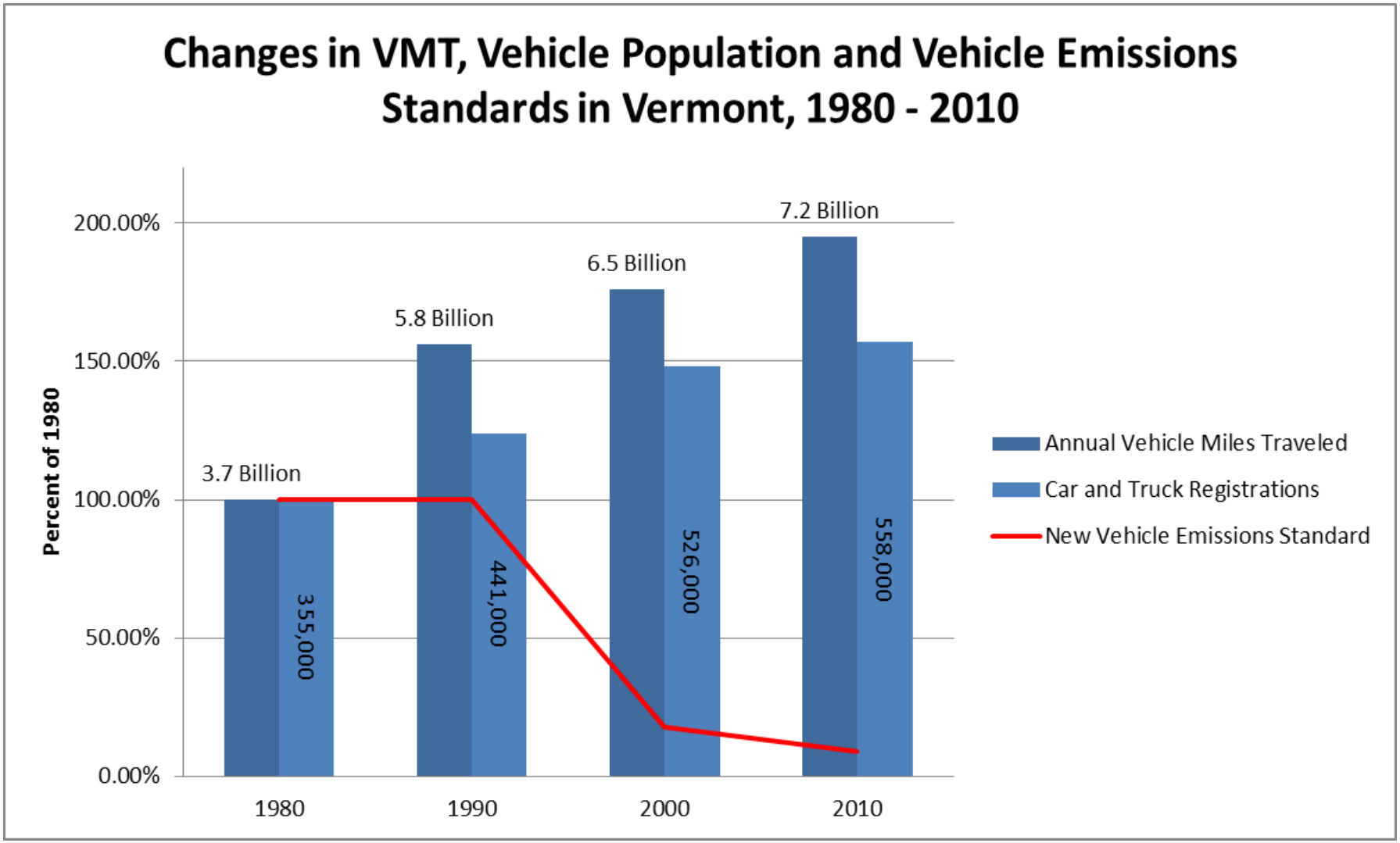


While ambient air concentrations of many hazardous air contaminants have declined in VT over time, benzene remains well above VT's standards. The difference between the urban sites in Rutland and Burlington and the rural site in Underhill indicates that local sources (e.g., motor vehicle exhaust, refueling, and residential wood burning) are primarily responsible for VT's benzene levels.

Number of Registered Stationary Sources in Vermont and Associated Emissions of Hazardous Air Contaminants (HACs)



This performance measures shows a decline over time in emissions of HACs from registered stationary sources, which is an indicator that the AQCD's air pollution control strategies (e.g., registration fees, permitting requirements, compliance and inspection efforts, etc.) are working.



Motor vehicles are the largest source of air pollution in Vermont. Decreasing motor vehicle emission standards help to offset increases in VMT and vehicle population in Vermont. The AQCD also supports efforts to ensure emission control systems are properly maintained and repaired.

Education & Outreach: Motor Vehicles

- While new vehicle emissions have decreased dramatically, vehicles remain clean only if their emissions control systems are properly maintained. In 2013, the AQCD conducted 6 training classes for more than 150 automotive technicians in Vermont to help ensure effective emissions repairs.

- In 2013, the AQCD partnered with the American Lung Association of Vermont to conduct an outreach campaign to promote the benefits of reducing unnecessary vehicle idling, such as positively impacting lung and heart health, protecting the environment, reducing fuel consumption, and increasing vehicle longevity.

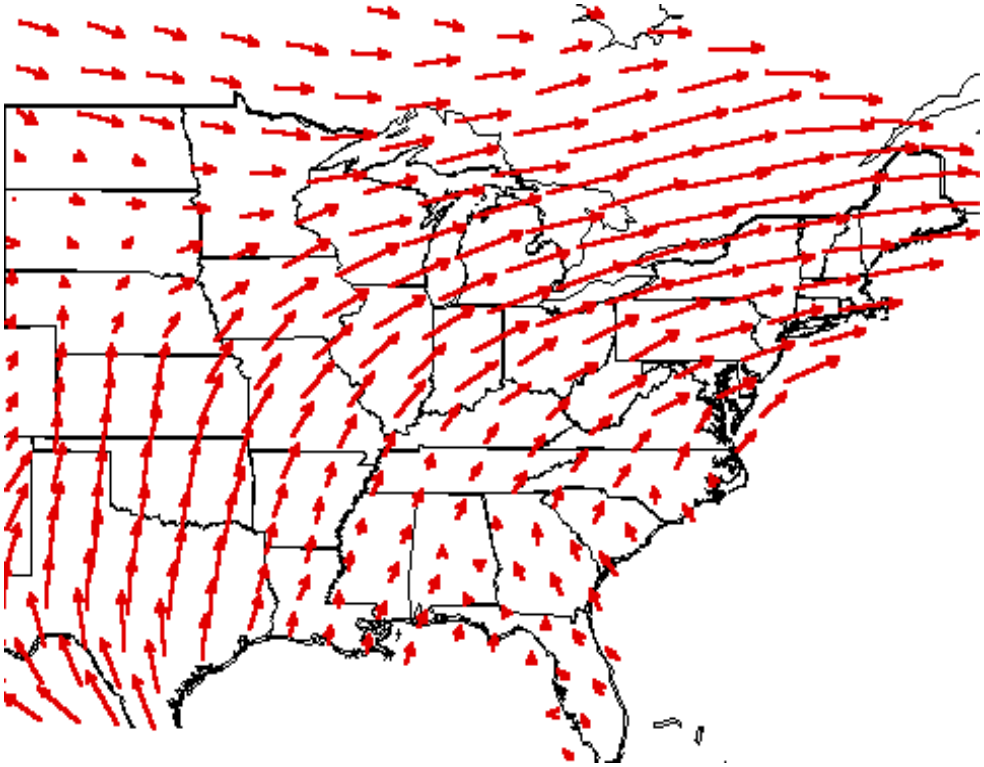
ECOS

NERAQC
Northeast Regional Air Quality Committee

NARSTO
Better Air Quality for North America

NACAA
national association of clean air agencies

Because Air Pollution Does Not Recognize Borders…



MANE - VU
Mid-Atlantic/Northeast Visibility Union

OZONE TRANSPORT COMMISSION

RGGI Inc.

NESCAUM

National Atmospheric Deposition Program

AirNow

CONFÉRENCE GNA·PMEC NEG·ECP QUÉBEC2013 CONFERENCE

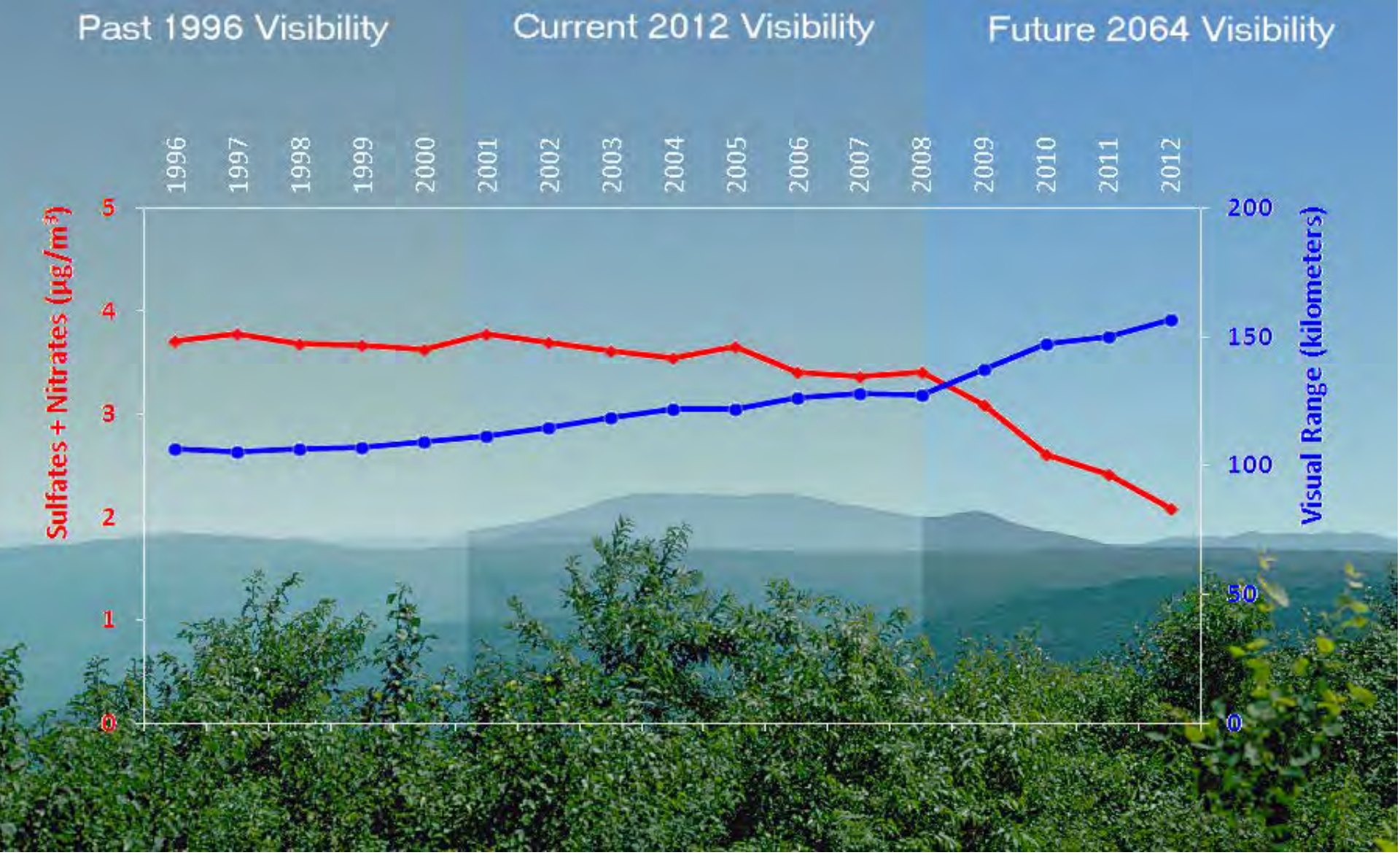
The characteristic transport wind vectors for the highest 20% ozone days in New England are shown here. To reduce the amount of air pollution transported to Vermont, the AQCD works with regional, national and international partners.

IMPROVE Interagency Monitoring of Protected Visual Environments

California Environmental Protection Agency Air Resources Board

NASA

Northeast Diesel Collaborative
REDUCING DIESEL EMISSIONS, PROMOTING PUBLIC HEALTH



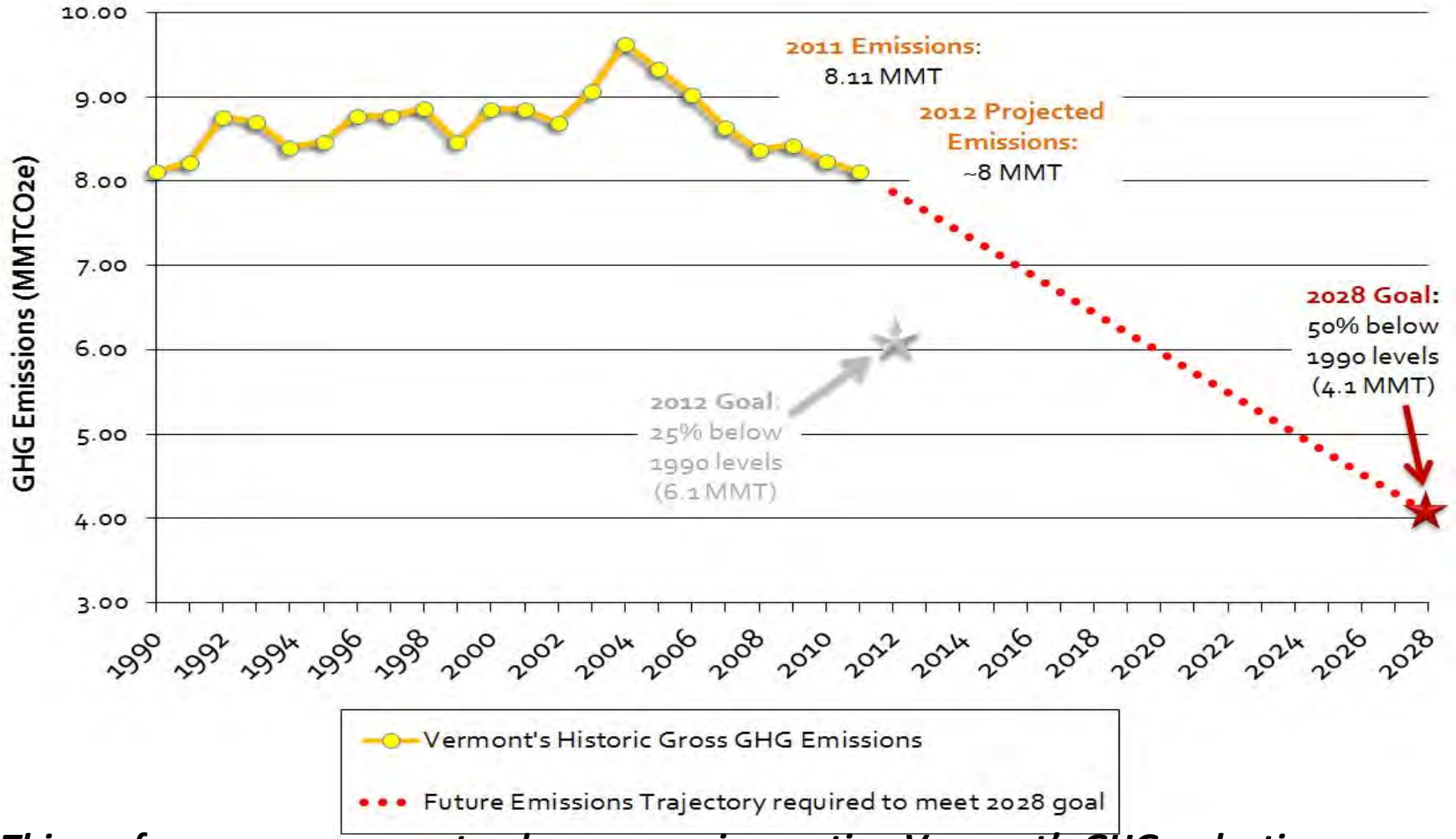
This performance measures shows 5-yr avg. reductions in sulfate and nitrate pollution (red) and visibility improvements (blue) from 1996-2012. The split image photo shows a view from Lye Brook as seen on the haziest 20 % days in 1996 (left), in 2012 (center), and projected to 2064 (right) to comply with EPA's Regional Haze Rule.

Education & Outreach: Air Quality

- Through a partnership with US EPA, the AQCD provides real-time air quality measurements and forecasts via the EPA AIRNOW website and EnviroFlash notices, which are available by e-mail, text message, and an iPhone App, to allow Vermonters, especially those with sensitivities to adjust their lifestyles when necessary.

- The AQCD raises public awareness about the effects of air pollution on visibility by displaying pictures and corresponding air quality and weather conditions on NESCAUM's CAMNET website.

Total Vermont Gross Greenhouse Gas (GHG) Emissions 1990-2011



This performance measure tracks progress in meeting Vermont's GHG reduction goals. Vermont did not achieve its 2012 goal of reducing GHG emissions to 25% below 1990 levels. Vermont now must focus on reducing GHG emissions to 50% below 1990 levels by 2028 as set forth by state statute.

Education & Outreach: Climate Change

The AQCD provides Vermonters with science and technical information on climate change through a number of channels:

- Climate Change website: >4,500 visitors in 2013
- Climate Connections newsletter (produced quarterly) is direct e-mailed to 245 subscribers, plus available on website
- @vtclimatechange on Twitter – 149 followers and growing

Waste Management and Prevention Division

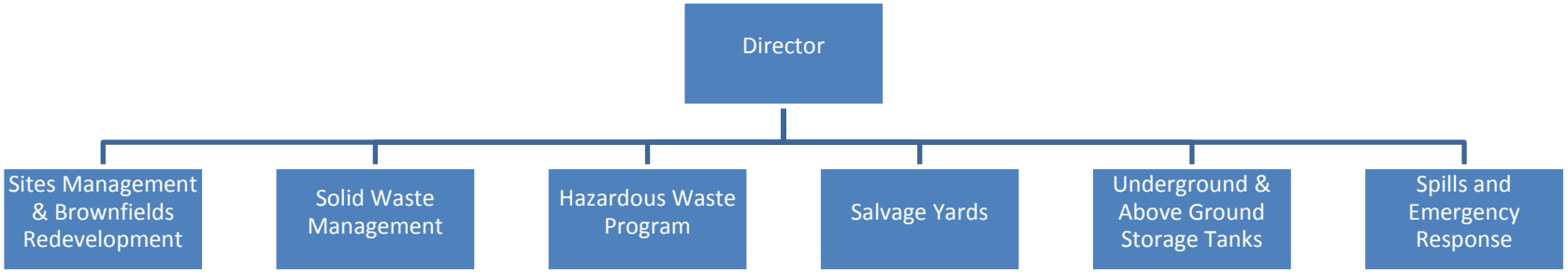
Waste Management and Prevention Division

Description of Work

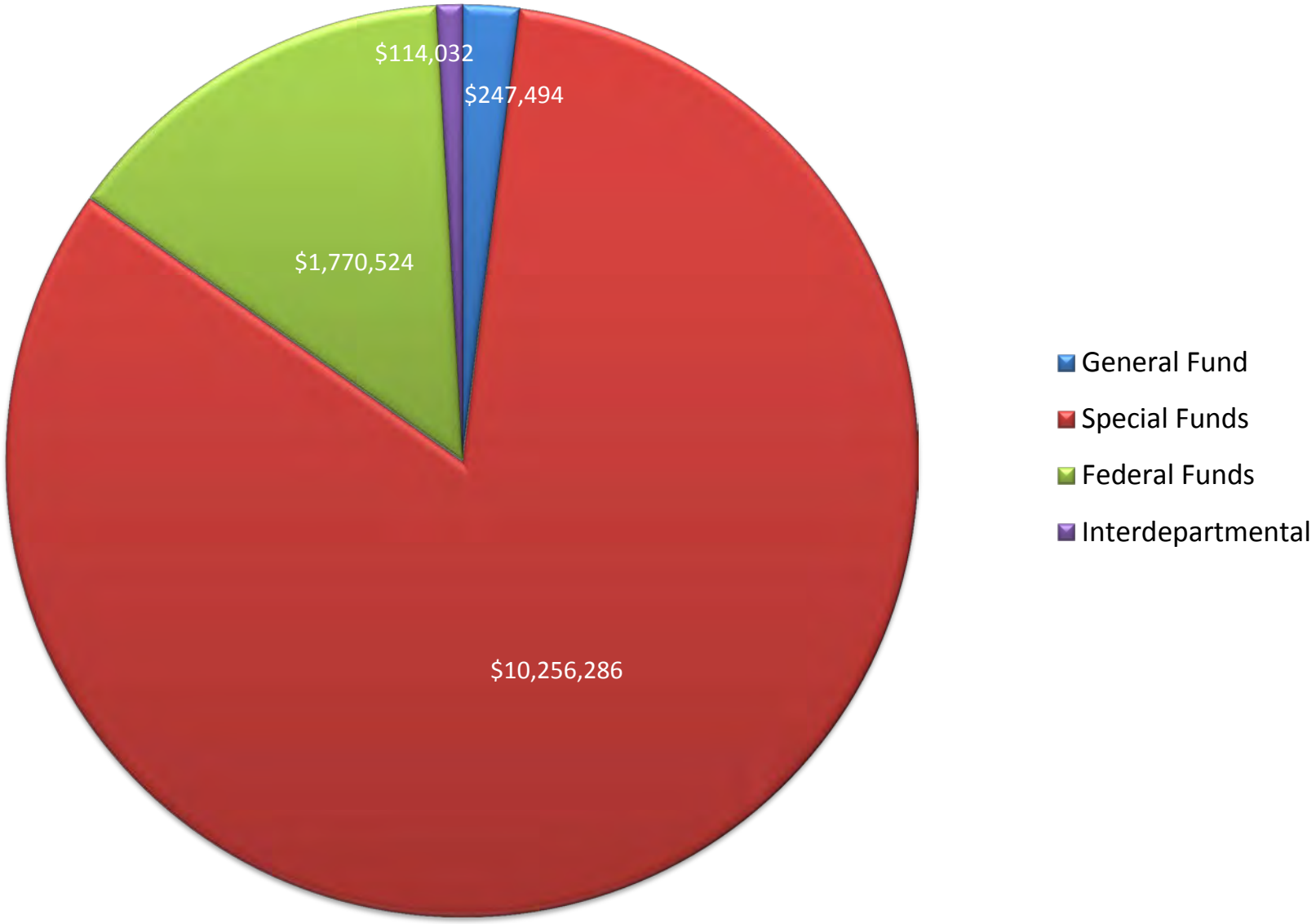
WMPD regulates Solid and Hazardous Waste management facilities to prevent waste generation where possible, to minimize impacts to the environment and human health when necessary, and to remediate, restore and redevelop contaminated sites to sustain community vitality.

Waste Management and Prevention Division

Organizational Structure



DEC Waste Management and Pollution Prevention Division
FY2014 Budget By Major Funding Source



Solid Waste Management Program

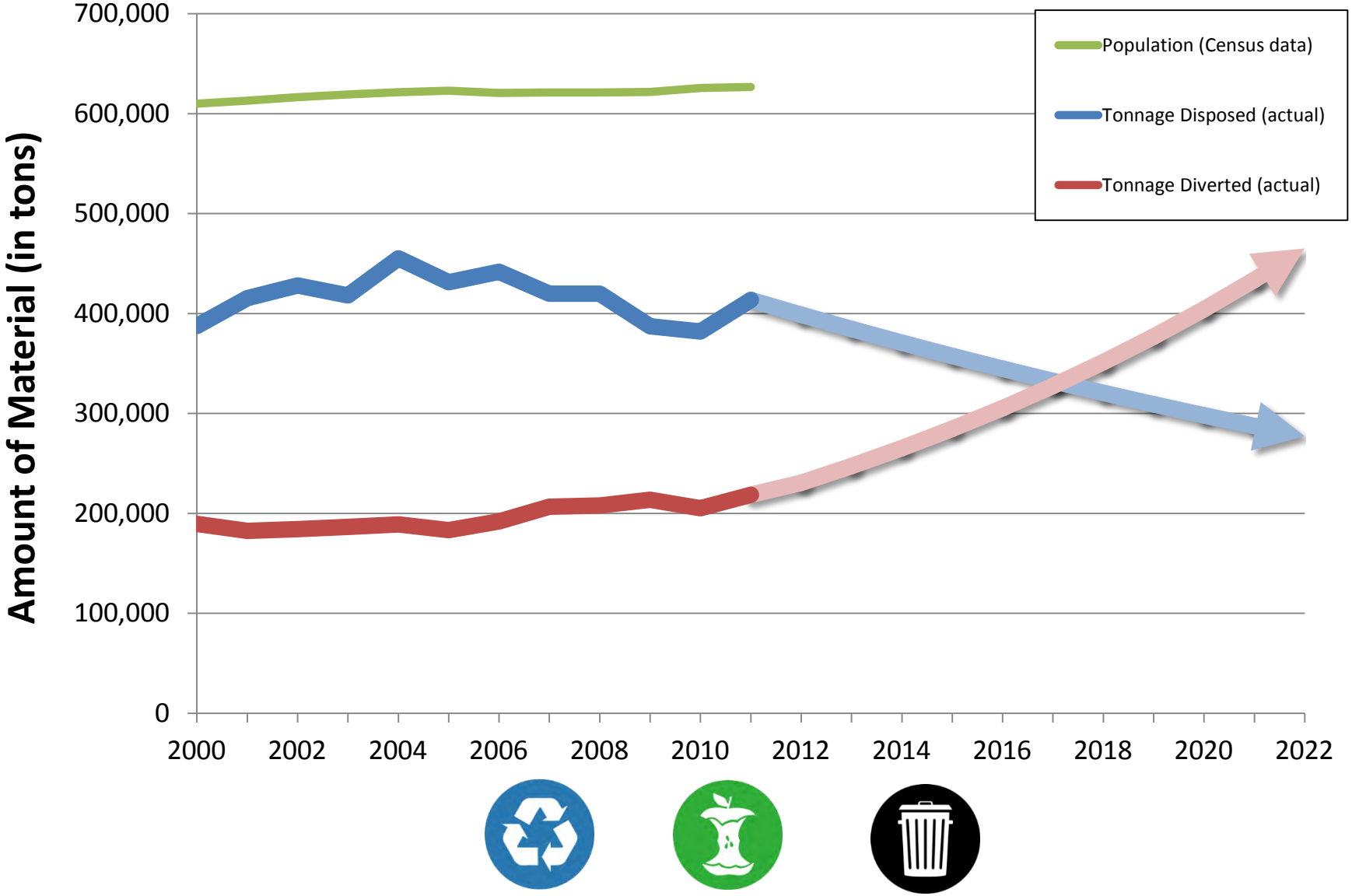
- Materials Management through hierarchy of waste prevention, reduction, reuse and recycling.
- Product Stewardship (e.g Mercury, Electronic waste, Paint)
- Solid Waste Management Assistance Fund
- Planning
- Certification and Compliance

Change our view from “waste” to…

Materials Management

Materials Disposal and Diversion Vermont

Past, present and future estimates

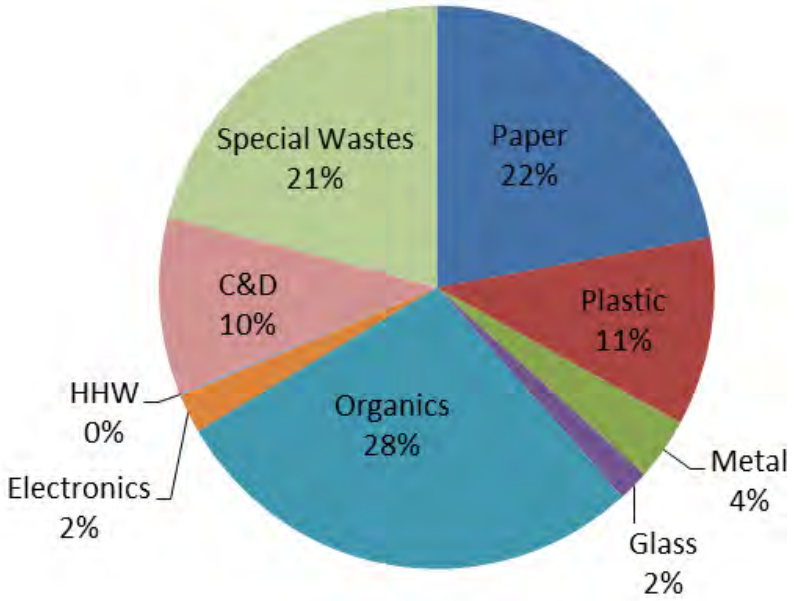


*__Diversion__ refers to materials that are recycled or composted. Waste prevention and re-use is not currently tracked by ANR.

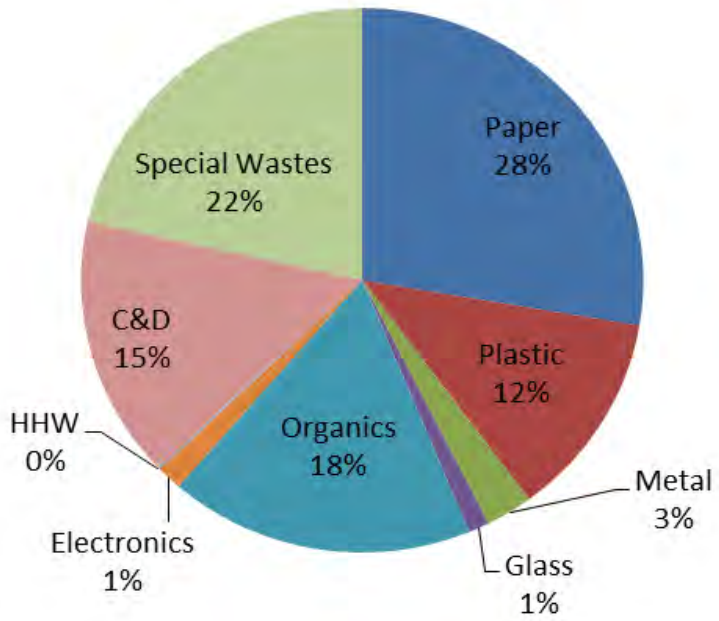
Current Disposal Rate

2013 Waste Composition Study

Residential

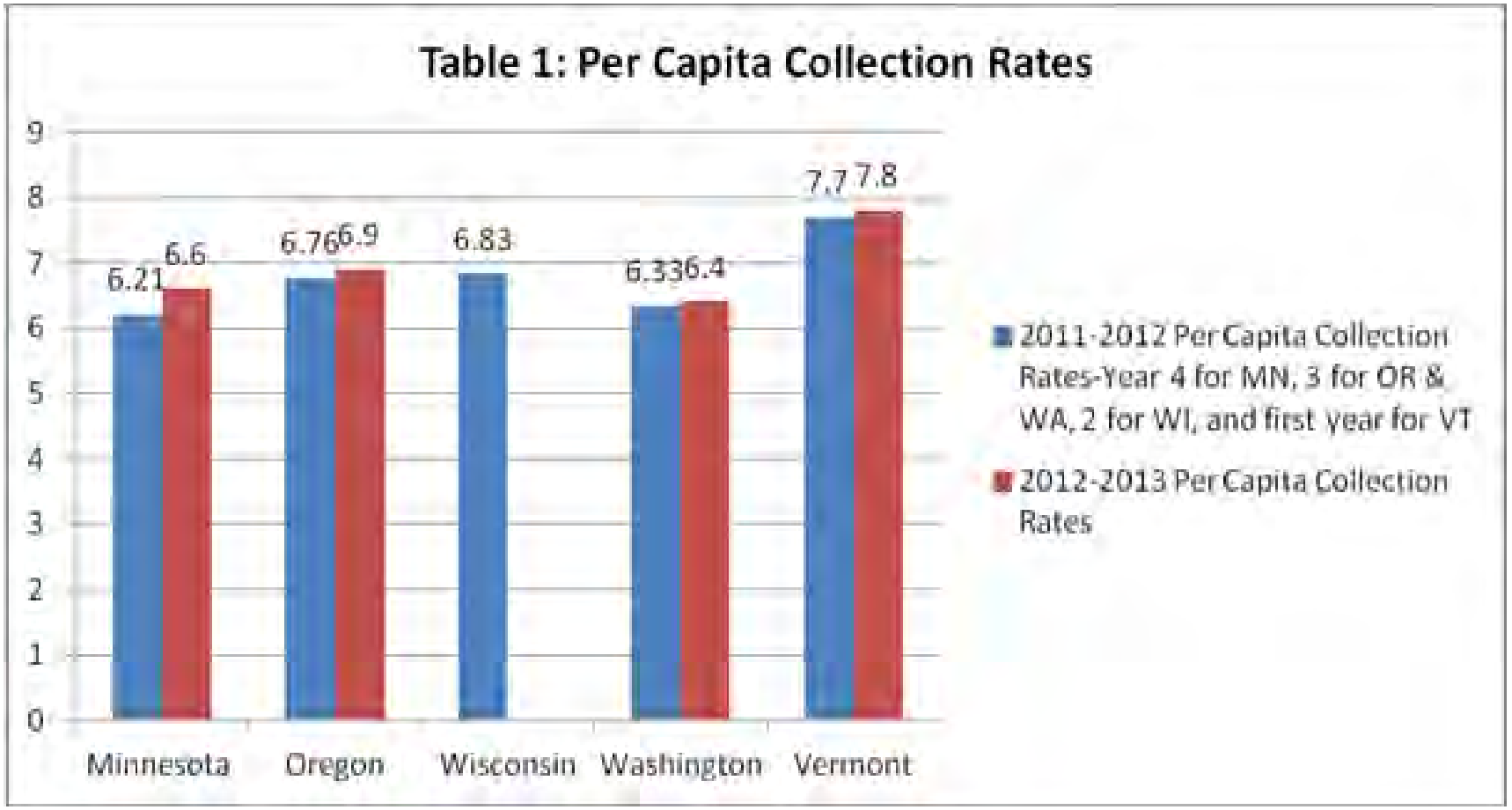


Industrial, Commercial and Institutional



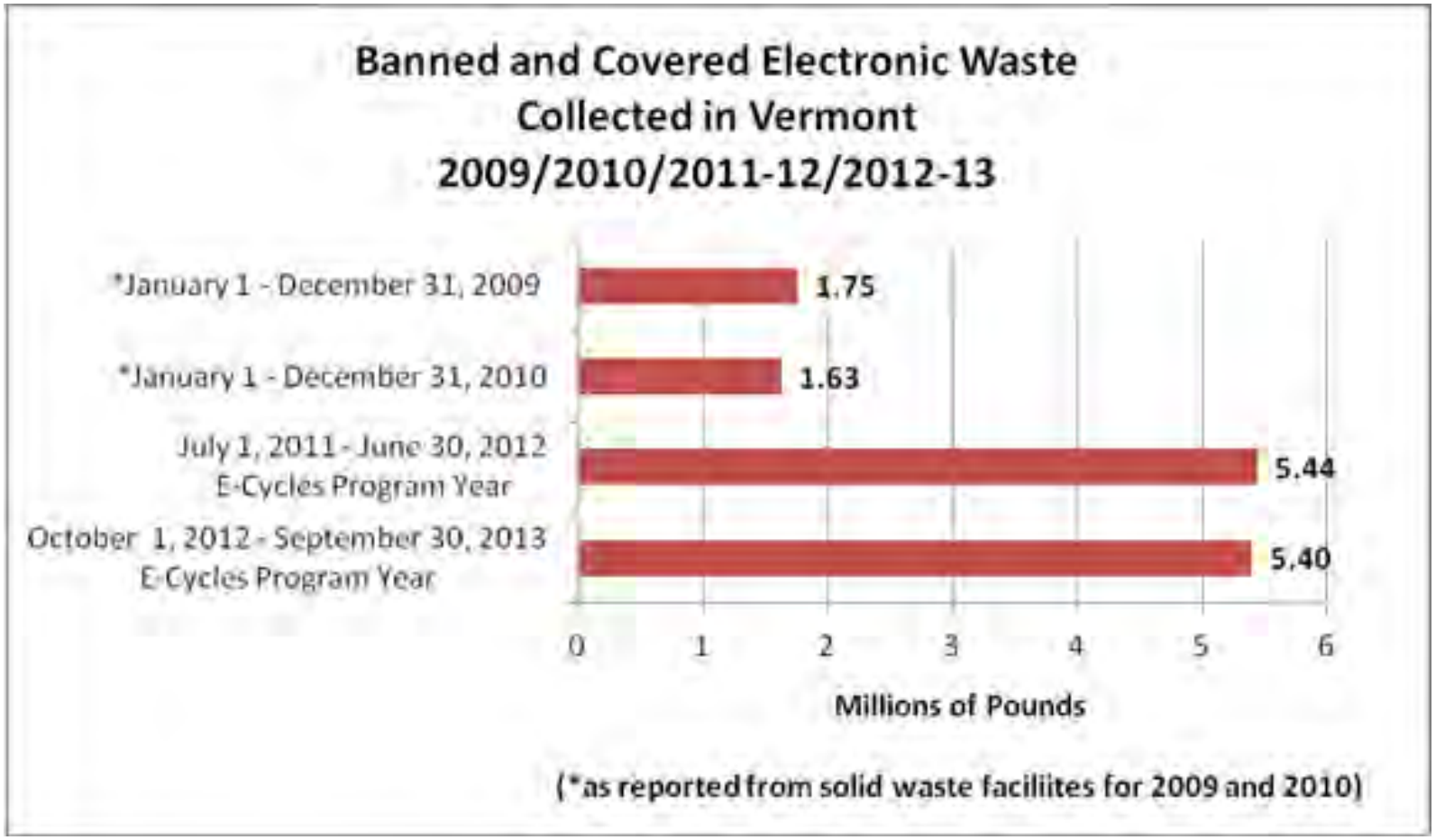
E Cycles

Vermont Electronic Waste Recycling Program



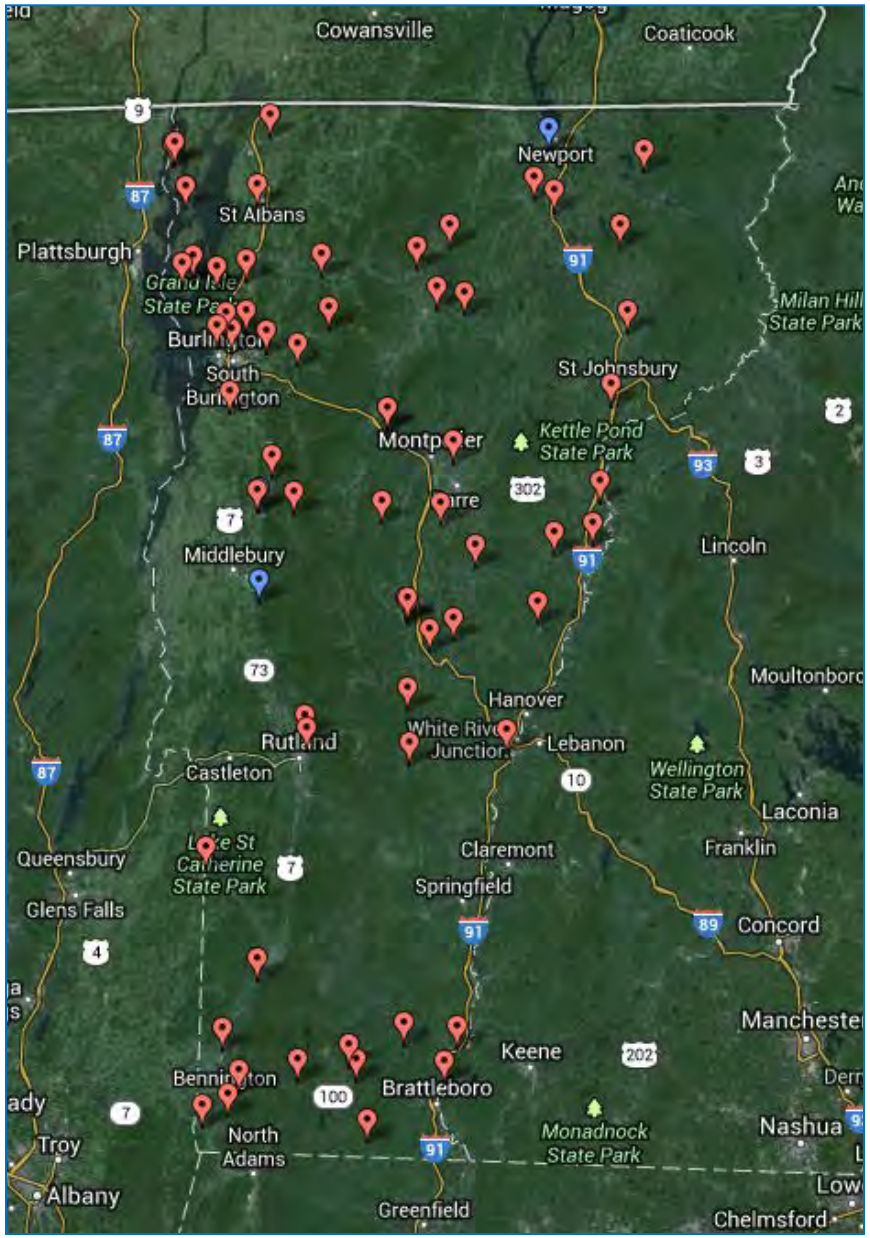
E Cycles Progrm

Measure: Millions of Pounds / year



Status Evaluation of Closed Landfills

59 Closed Landfills Under the Program's Regulatory Authority



Majority are regulated under Post-Closure Certification (PCC)

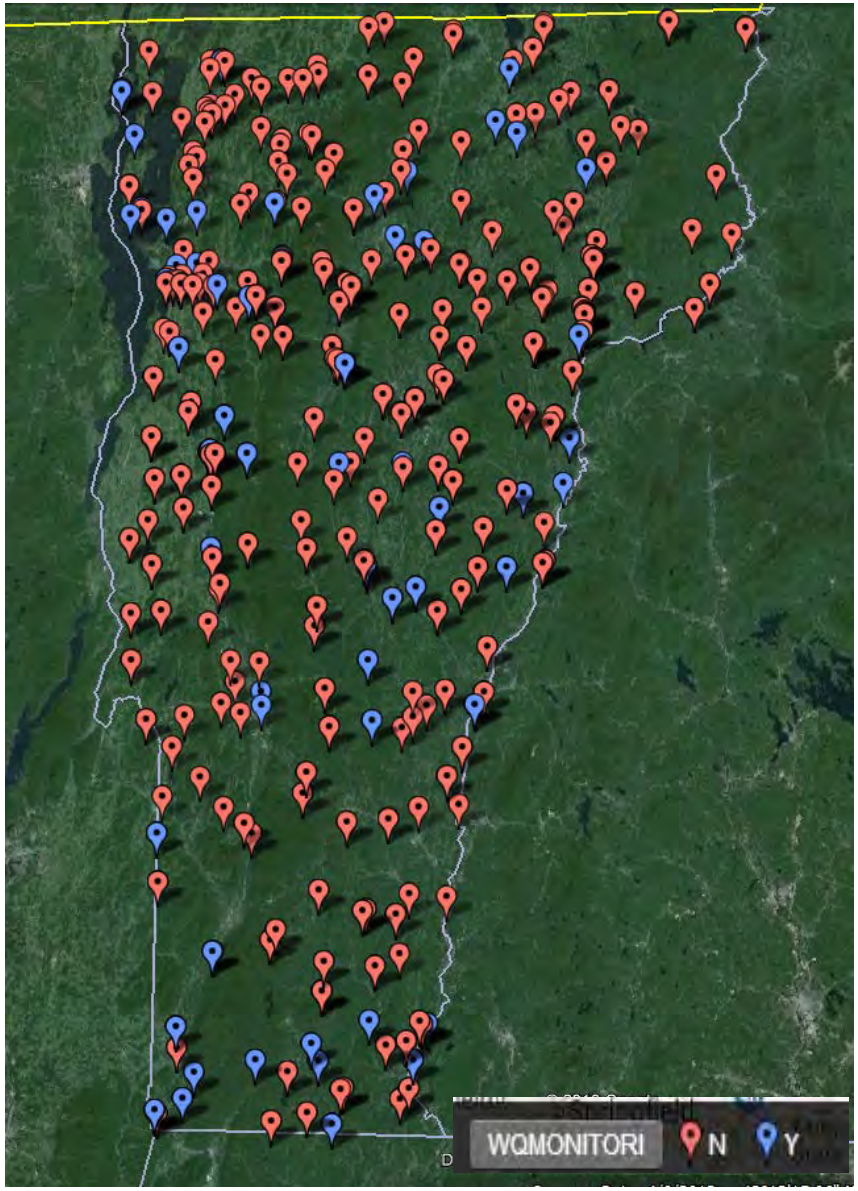
Typically this requires:

- Annual inspection by engineer
- Semi-annual or annual groundwater quality monitoring
- Annual cap maintenance (mowing)

300+ old landfills across the State

Majority closed prior to Federal RCRA, Subtitle D and Act 78 implementation:

- had no closure procedure
- Little to no data on environmental impact



Custodial Care – End of mandated regulatory care

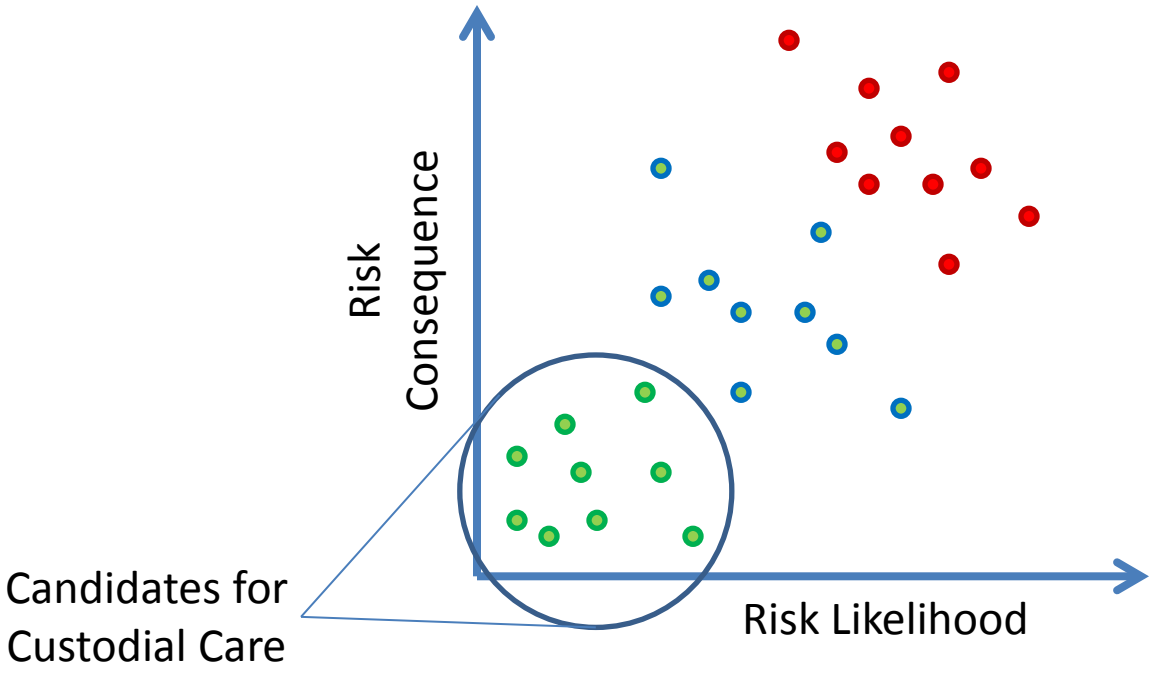
If the landfill is stable and proven to have little to no environmental impact:

- Apply for custodial care after completion of mandatory ± 20/30 year post-closure period
    - 63% of the regulated landfills have completed 20 yrs PCC
- Move out of 5-yr certification cycle, and into minimal regulatory authority

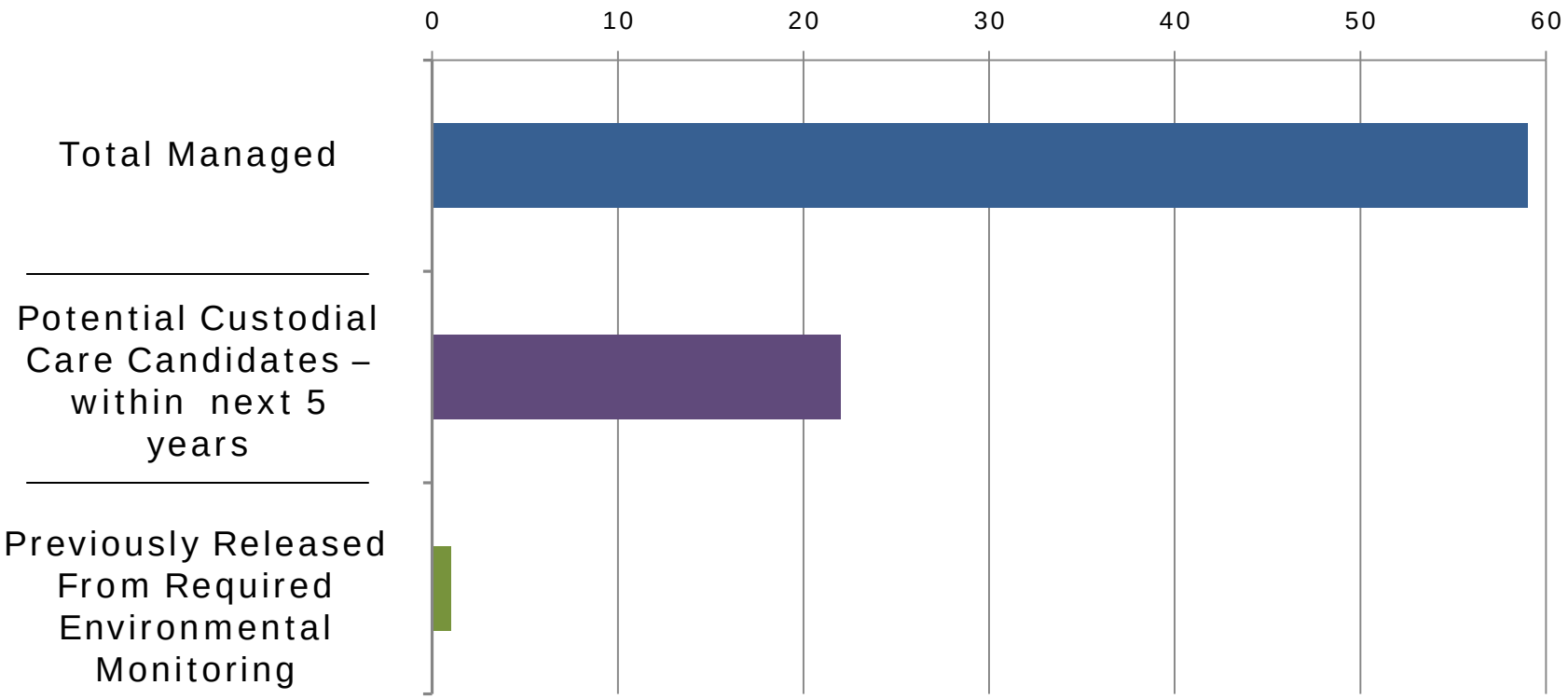
To do this
Need to evaluate the current risk associated with each of these landfills

Goals:

1. Develop a *quantifiable* risk evaluation methodology
   - Use the data collected over the post-closure period
   - Evaluated land-use changes in vicinity of landfill
   - Field and map based investigations
2. Test the methodology
3. Prioritize sites of risk and stability
4. Identify actions that high risk sites can take



Closed Landfills:
Managed by the Solid Waste Program



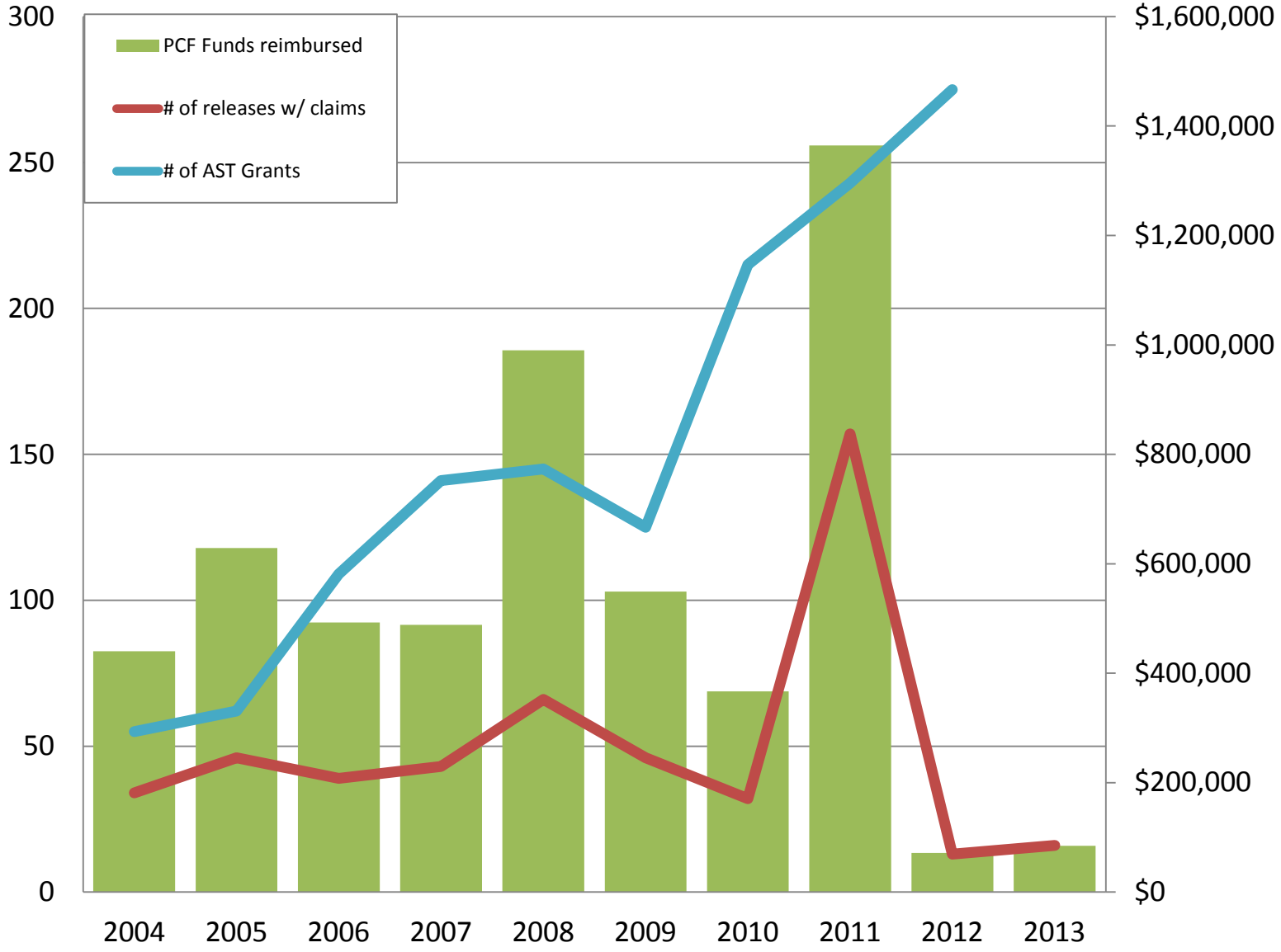
Sites Management and Brownfields Redevelopment Program

- Petroleum Cleanup Fund
- Environmental Contingency Fund
- Brownfield Response Program
- Remediation of contaminated sites
- Redevelopment of Sites to restore Community vitality

Measure of Success:

Above ground storage heating oil tank (AST) releases and annual clean up costs are decreasing

AST Releases, Petroleum Cleanup Fund Claims, and Tank Replacement Grants



Brownfields Development Program leverages funding from other sources

EPA Assessment

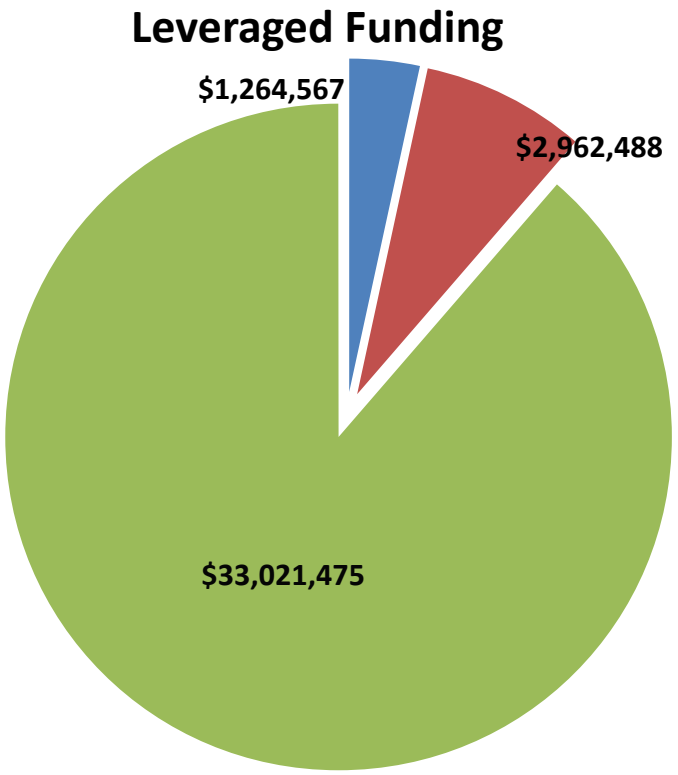
Federal money used for site assessments – Phase 1, Phase 2, and Corrective Action Plans

EPA Cleanup

Federal money used for implementation of Corrective Action Plan

Leveraged Funding

All funding allocated for total project redevelopment (examples include: Community Development block grants, HUD, private funding (loans)etc..

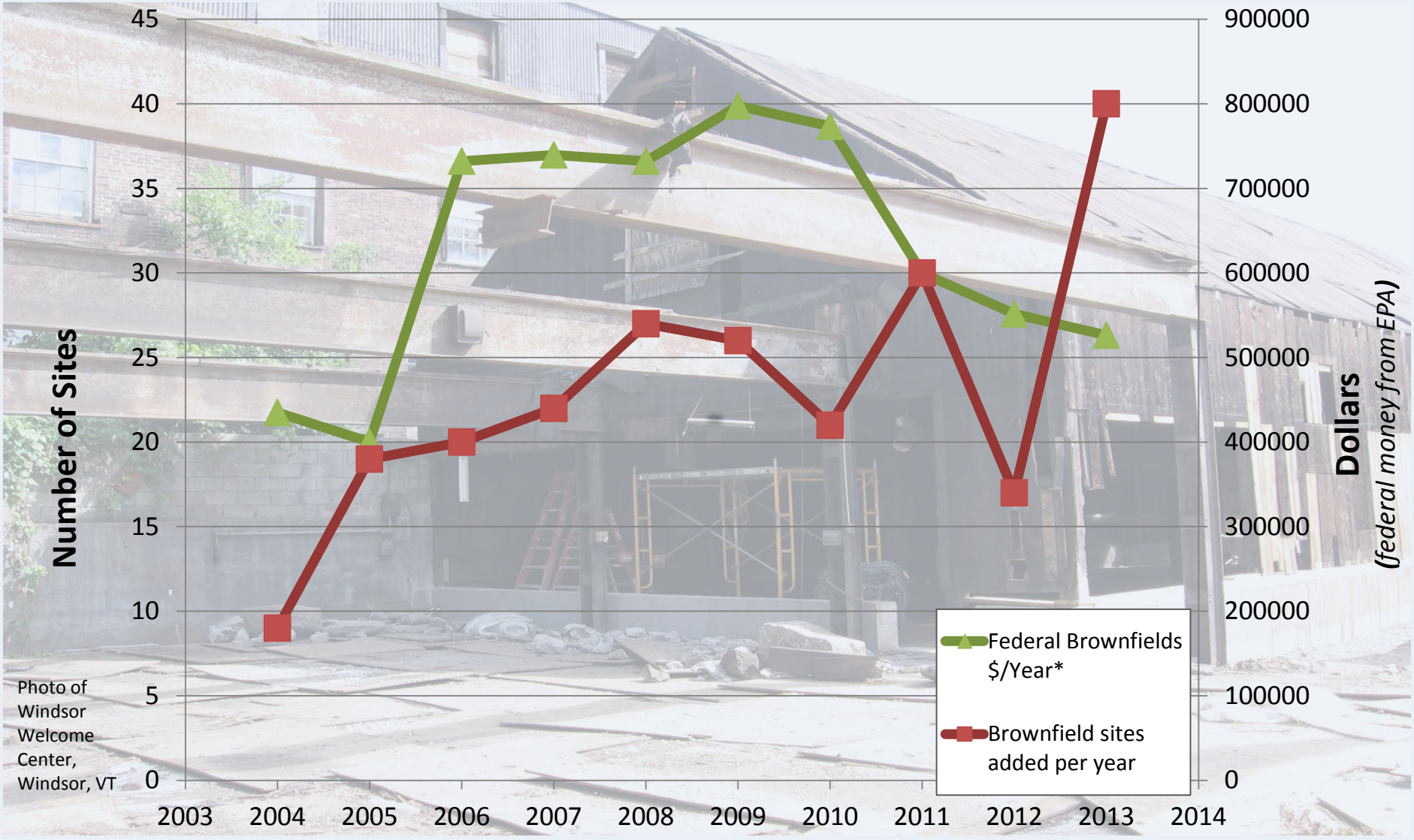


This chart represents data from 63 Sites out of 244 total Brownfields sites in Vermont. Data source is an EPA database

BROWNFIELD Site *means* real property, the expansion, redevelopment, or reuse of which may be complicated by the release or threatened release of a hazardous material".

BROWNFIELD Development *promotes*: Positive Environmental Outcomes, Downtown Development, Job Creation, Increased Property Tax Revenue, Private Investment and much more!

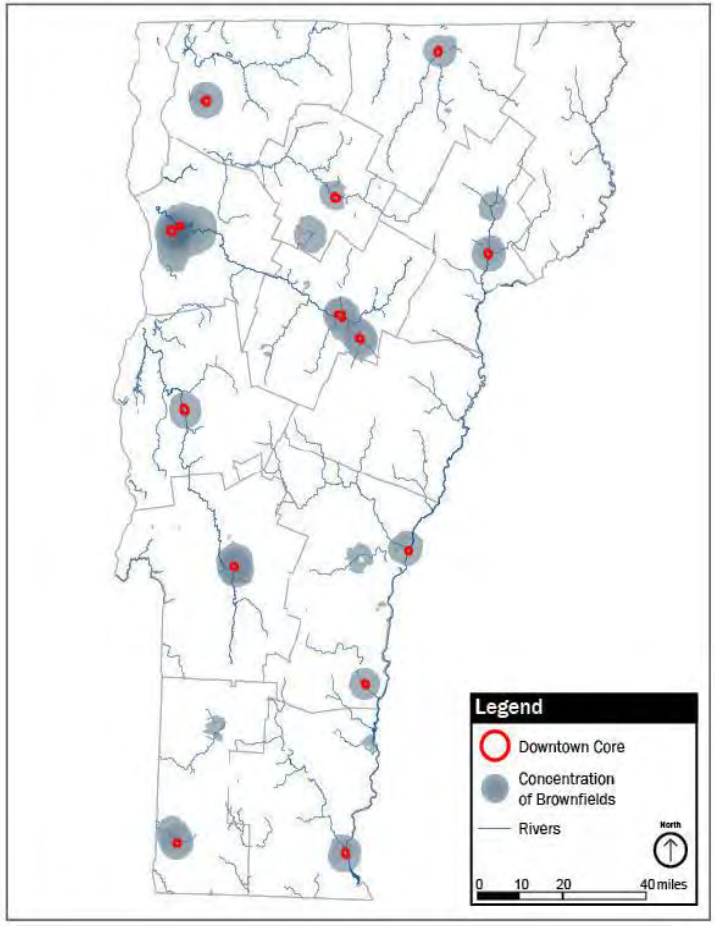
Funding Gap: Increasing number of Brownfields sites per year with decreasing federal funding



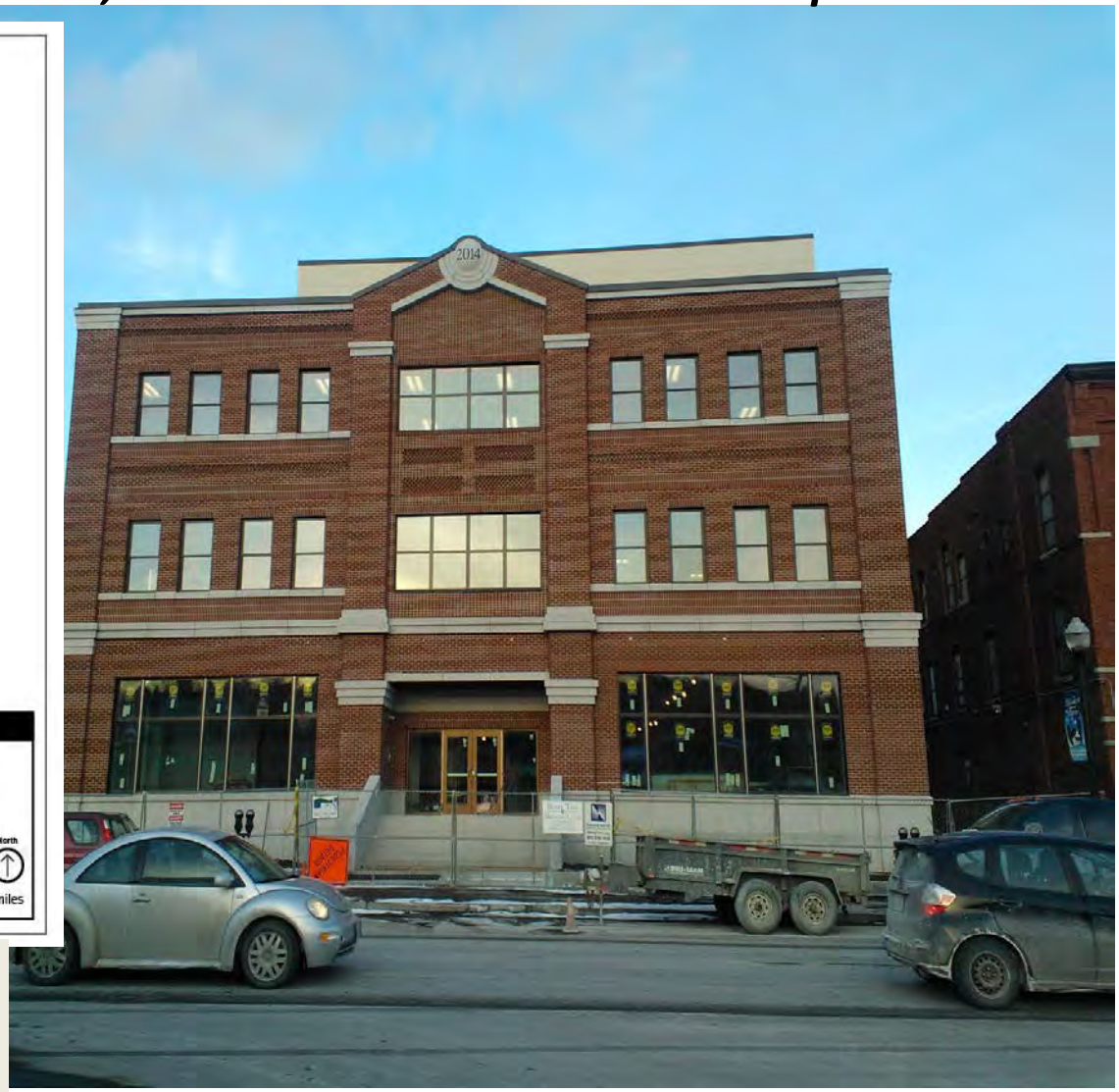
*Money/year represents EPA money awarded to all applicants in Vermont (VTDEC, ACCD, RPC, Municipal, Non-profits)

Brownfields Program:

Environmental Protection, Economic Growth and Redevelopment



Downtown Cores, Rivers& High Concentrations of Brownfields (2012)



City Place, Barre City

Technical Services

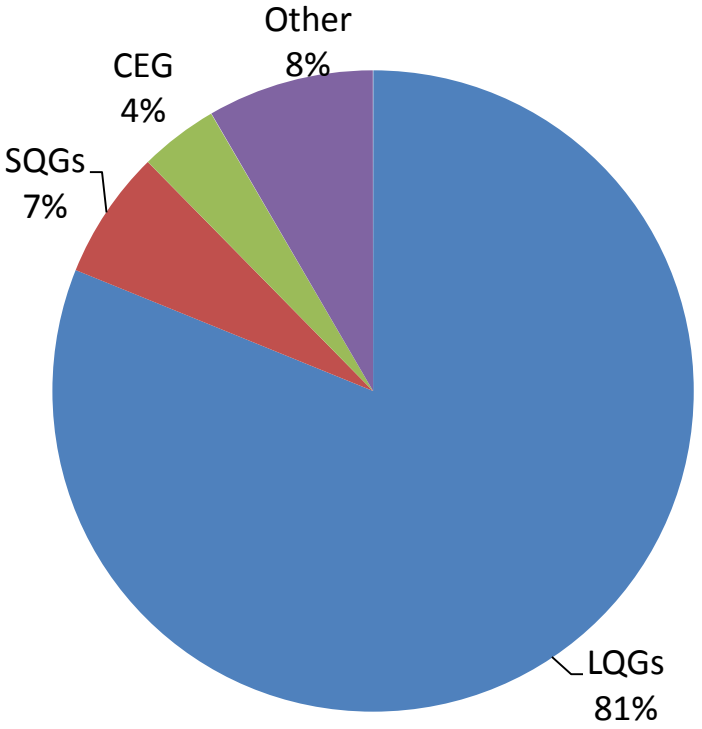
- Regulation of Hazardous Waste Generators
- Regulation of Underground Storage Tanks
- Regulation of Salvage Yards

Hazardous Waste Program

Hazardous Waste Generation and Inspection Coverage

Hazardous waste in Vermont

- 13 million pounds generated in 2012
- 4.9 million pounds handled by permitted storage facilities



Inspection Frequency by Generator Status

- Facilities that handle the most hazardous waste are inspected most frequently

Small Quantity Generator Self-Certification

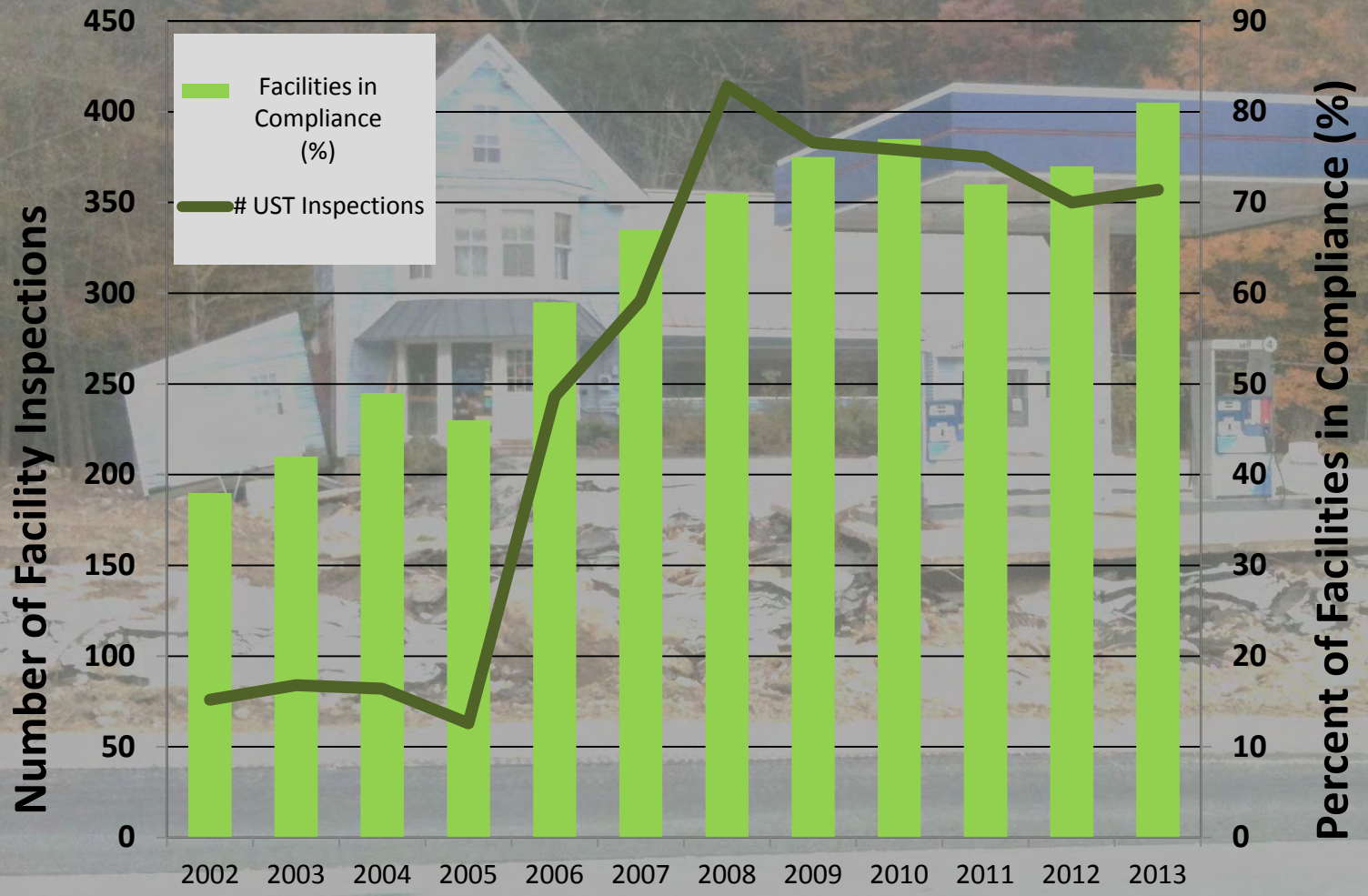
- Annual self-certification of compliance by small-quantity generators (SQGs)
- Distill applicable regulations to a manageable number of questions on self-certification checklist
- Use statistically significant number of random inspections to compute compliance rate for entire SQG population
- Why SQGs?
  - Generate 7-8% of all waste but inspected only about once every 20 years
  - Generally have lower compliance rates than larger facilities

Why Self-Certification?

- Requires all SQGs to annually review regulatory requirements and fill out checklist
- Improves awareness of regulations and therefore compliance
- It works – results from other self-cert. programs:
  - Colorado SQG initiative: compliance rates improved from 32% to 84% in 4 years
  - VT underground tank program: compliance rates improved from 66% to 80% in 5 years

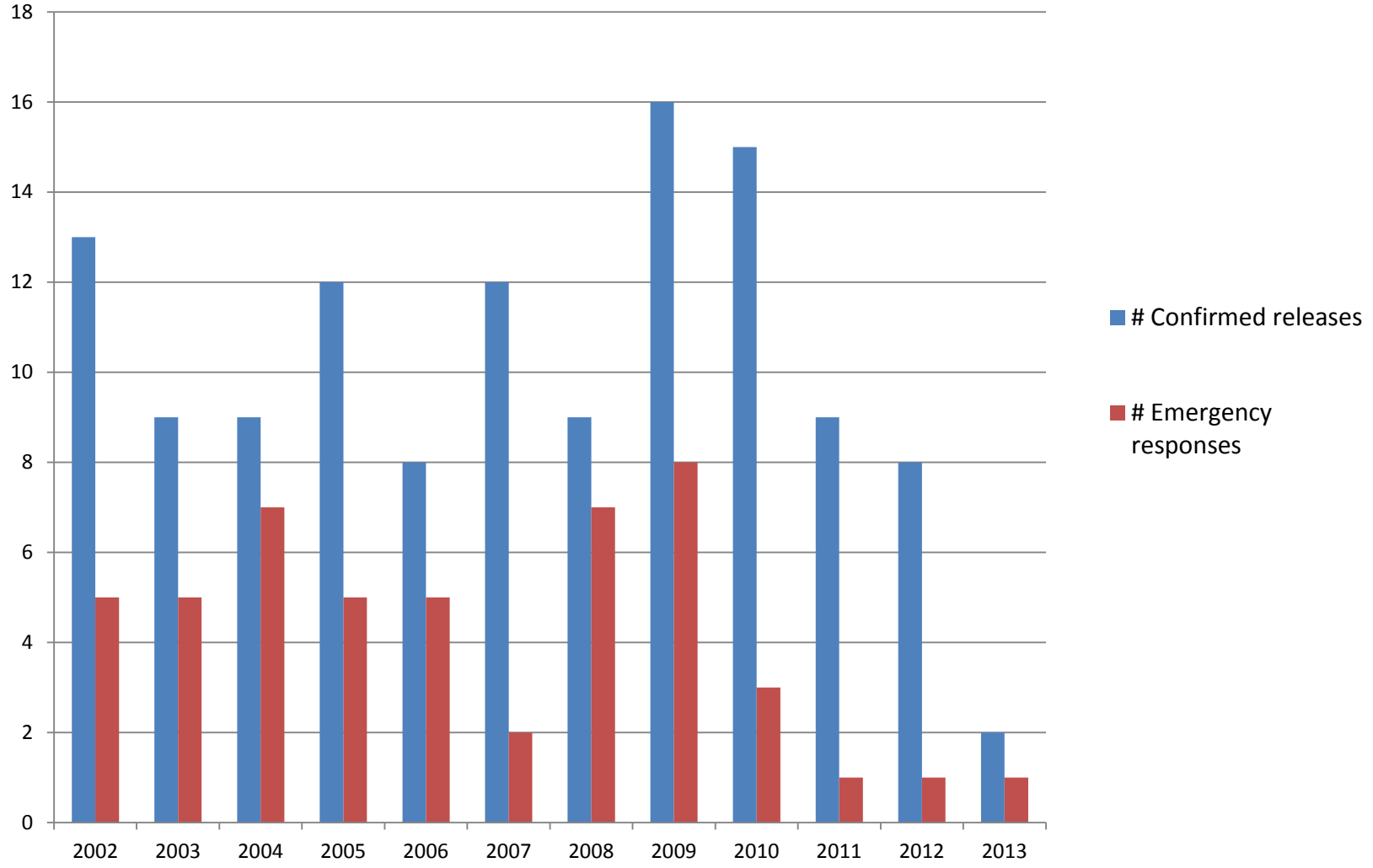
Underground Storage Tank Program

Number of inspections vs. Percent in Compliance (SOC)



Underground Storage Tank Program

Number of emergency responses and confirmed releases from underground storage tanks over time



Salvage Yard Program

3 year plan

Year 1 Focus:

Program Development

- Visit/Inspect Registered Yards
- Write Rules
- On-going cases with Enforcement Division
- Develop database

Year 2 Focus:

Unregistered/ Unpermitted yards

- Visit/Inspect Known un-registered yards
- Process annual registrations/permits
- Continue/develop cases with Enforcement Division
- Sector specific training

Year 3 Focus:

Focus: Review and Revise

- Inspections at certified yards
- Inspections at unpermitted yards
- Continue cases with Compliance and Enforcement
- Rule revision
- Statutory change

Salvage Yard Program

Performance Measures

(to be measured moving forward)

- Compliance rate at permitted facilities
- Number of first-time permits issued
- Number of cases referred to Enforcement Division

Salvage Yard Program

Collaboration with Compliance & Enforcement Division

- GOALS:
  - Compliance
  - Closure of non-compliant yards
- Support prosecution of existing cases
- Develop new cases

Spills and Emergency Response

Response to spills of hazardous wastes and other emergencies is accomplished using a team approach, with a team coordinator, drawing on resources within the existing programs. The Spill Team primarily responds to hazardous releases, most often petroleum related, and trains regularly for such events.

Administration & Innovation Division

2015 Performance Measures

Division Mission

The Administration and Innovation Division strives to provide effective and efficient services for cross departmental functions to all programs within the Department of Environmental Conservation. Our Division empowers programs with performance based budgeting and integrated planning to assist programs in identifying and sustaining long term revenue sources for providing environmental protection and resources for the people of the State of Vermont.

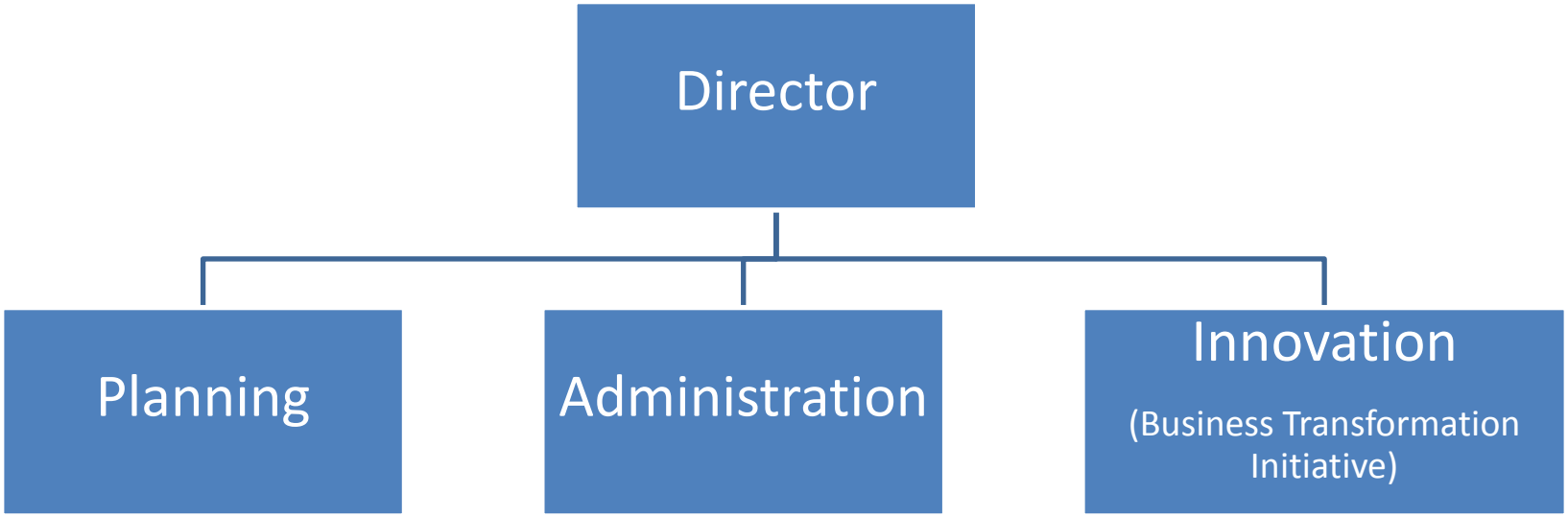
Description of Work

The Administration & Innovation Division provides cross departmental centralized services in the following:

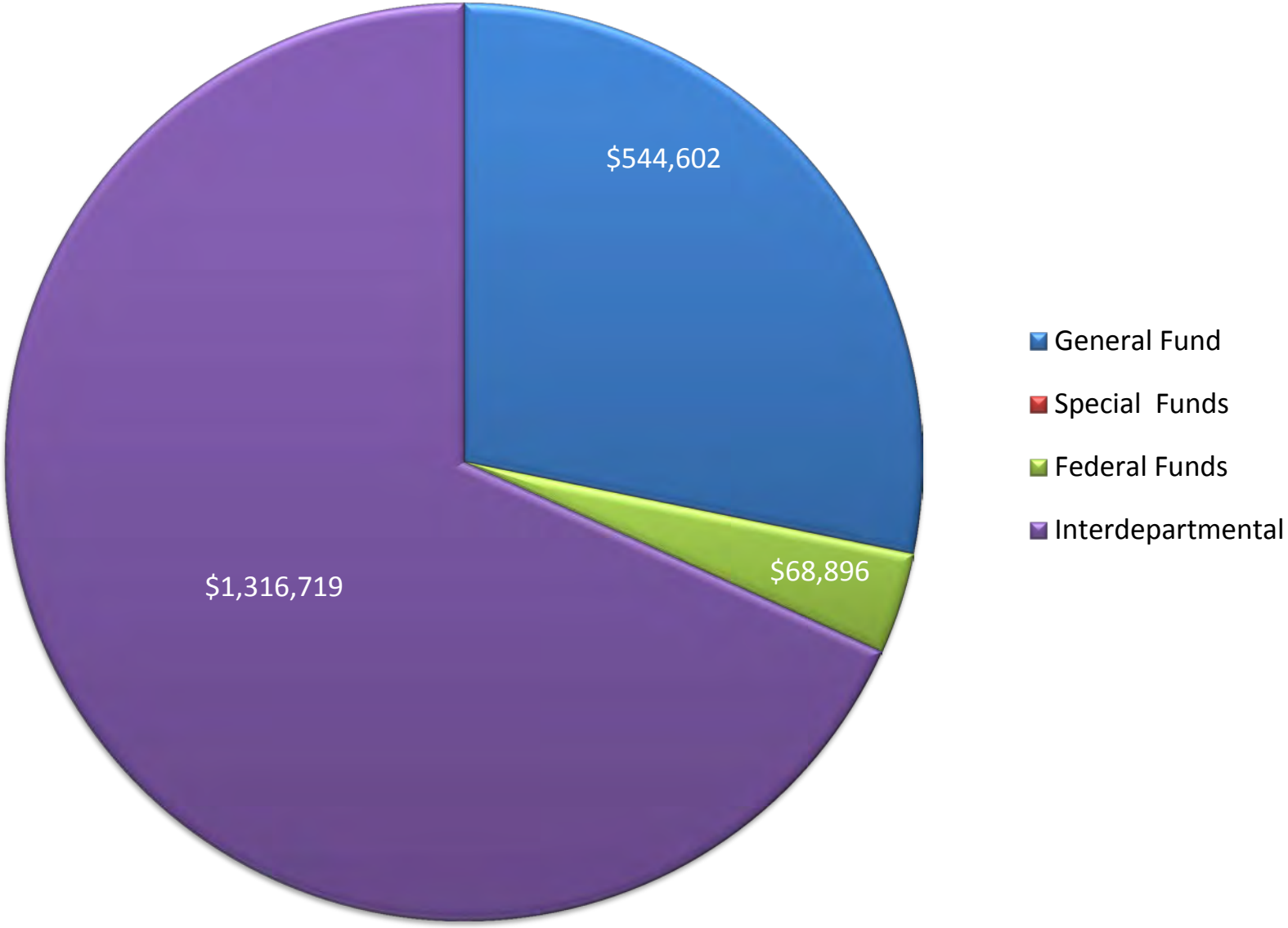
- Finance (budget, revenues, procurement, etc.)
- Planning
- Innovation (information technology)
- Business Transformation Initiative
- Personnel
- Space/Logistics

Administration & Innovation Division

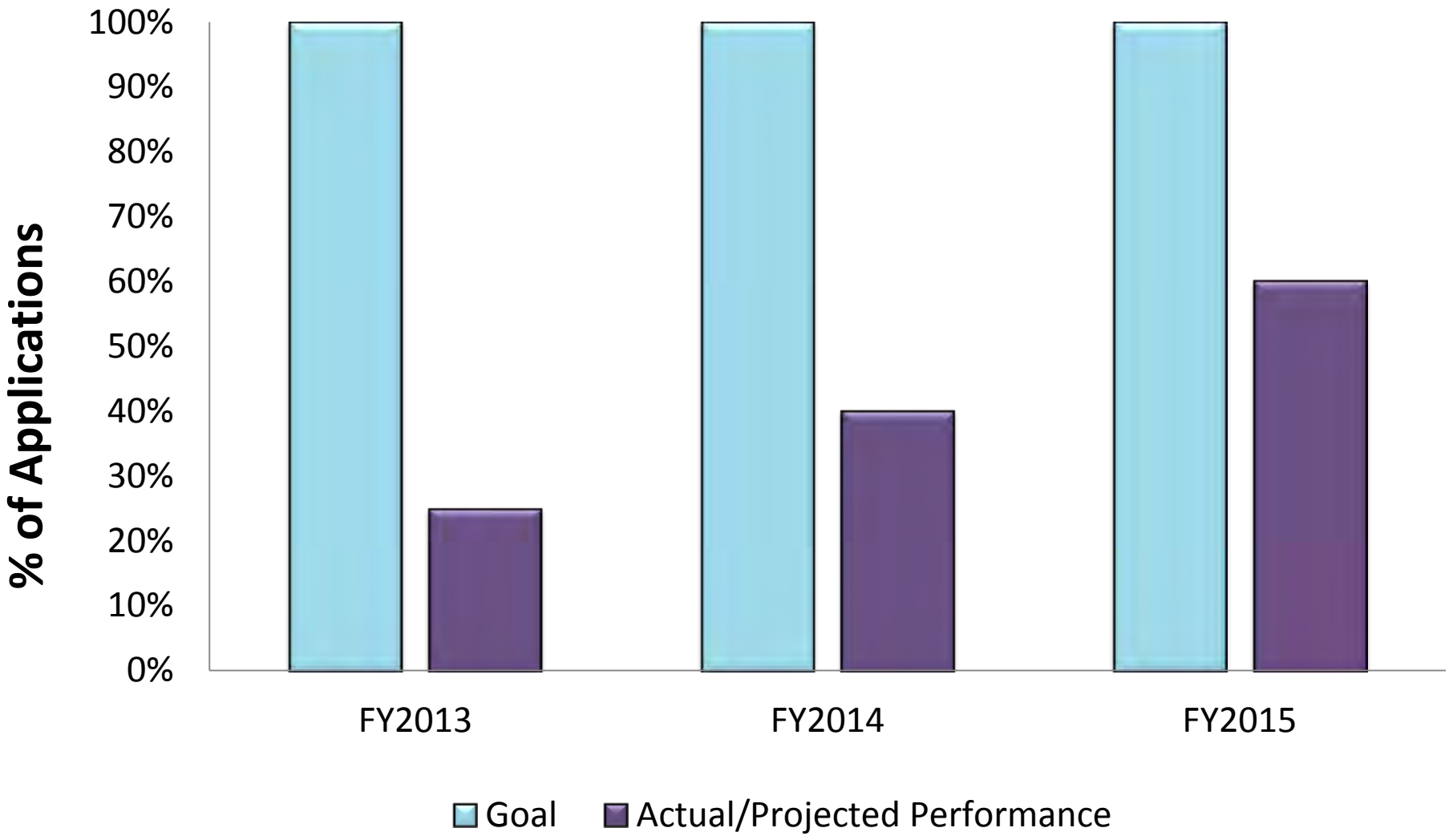
Organizational Structure



DEC Administration & Innovation Division
FY14 Budget by Major Funding Source

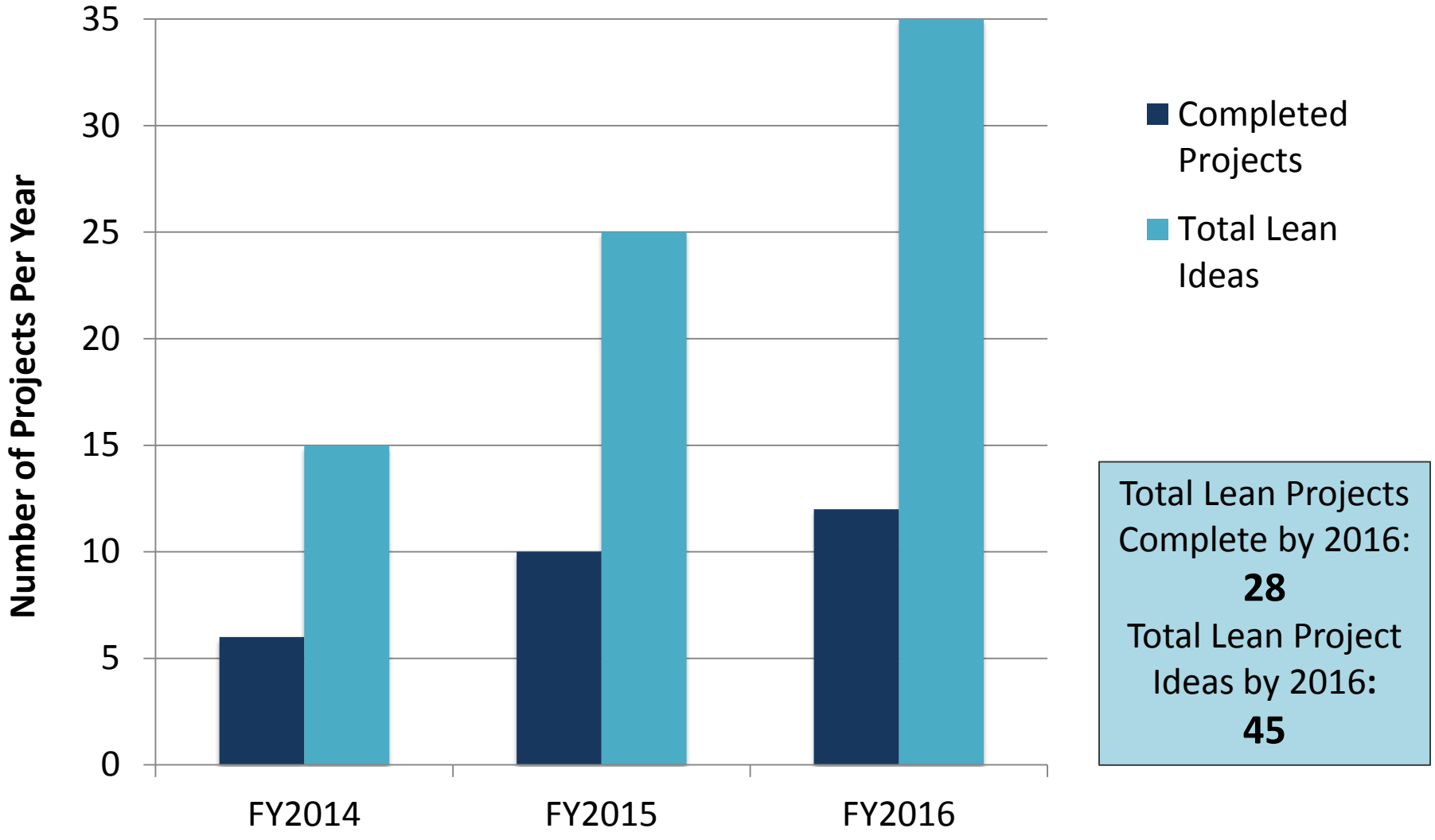


Electronic Permit Application Program
Wastewater On-site Permitting Electronic Submittals



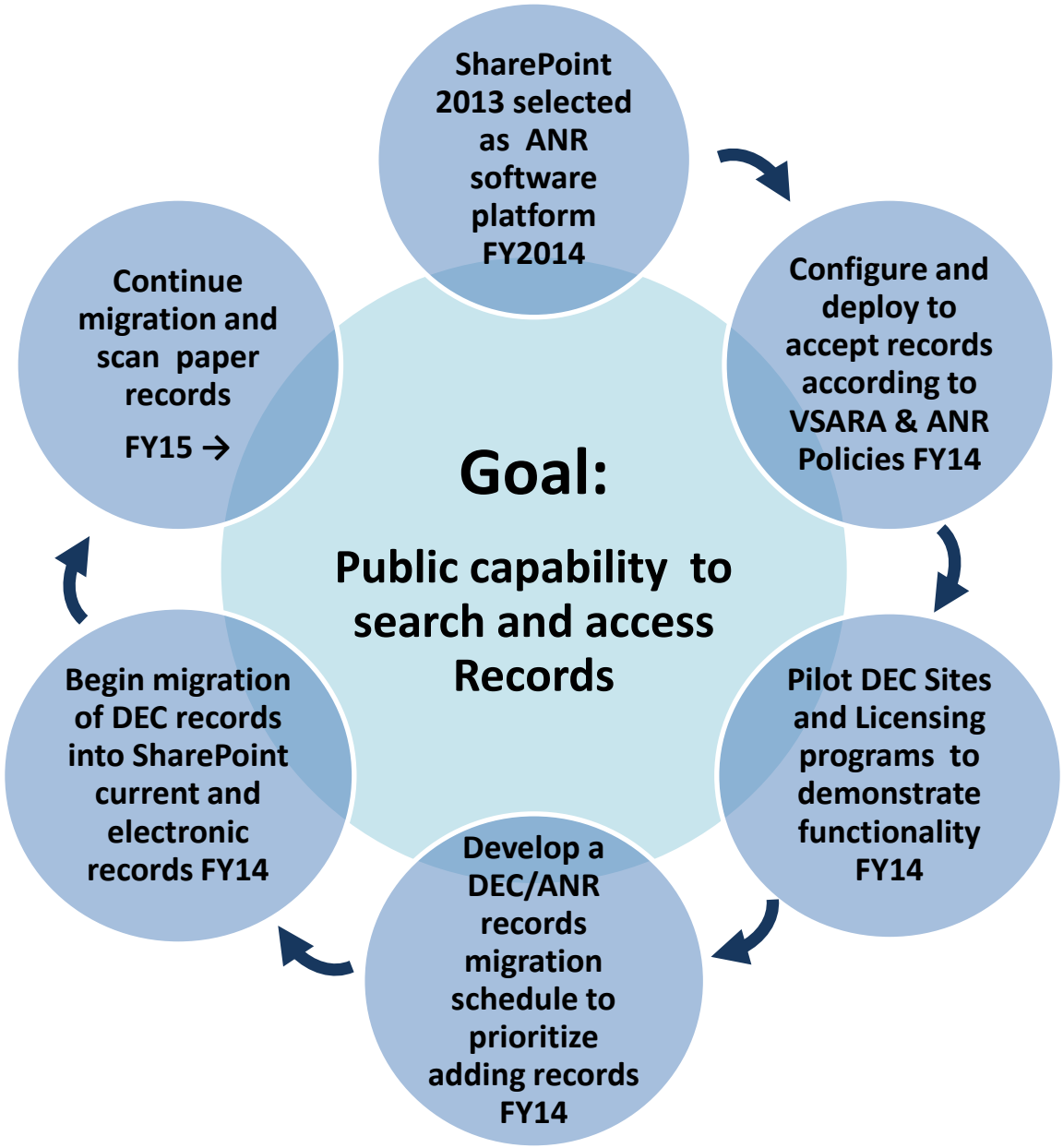
Note: Significant software system change in FY14/15. Projection includes contingencies needed to train users.

DEC Business Transformation Initiative
"Lean" Projects



Total Lean Projects Complete by 2016:
28
Total Lean Project Ideas by 2016:
45

Records Management



Environmental Assistance Office

2015 Performance Measures

Environmental Assistance Office Mission

- To improve the environmental performance of Vermont businesses and municipalities through non-regulatory compliance assistance, permit assistance and pollution prevention assistance

- To assist DEC regulatory programs improve compliance rates through outreach, assistance and coordination

Description of Work

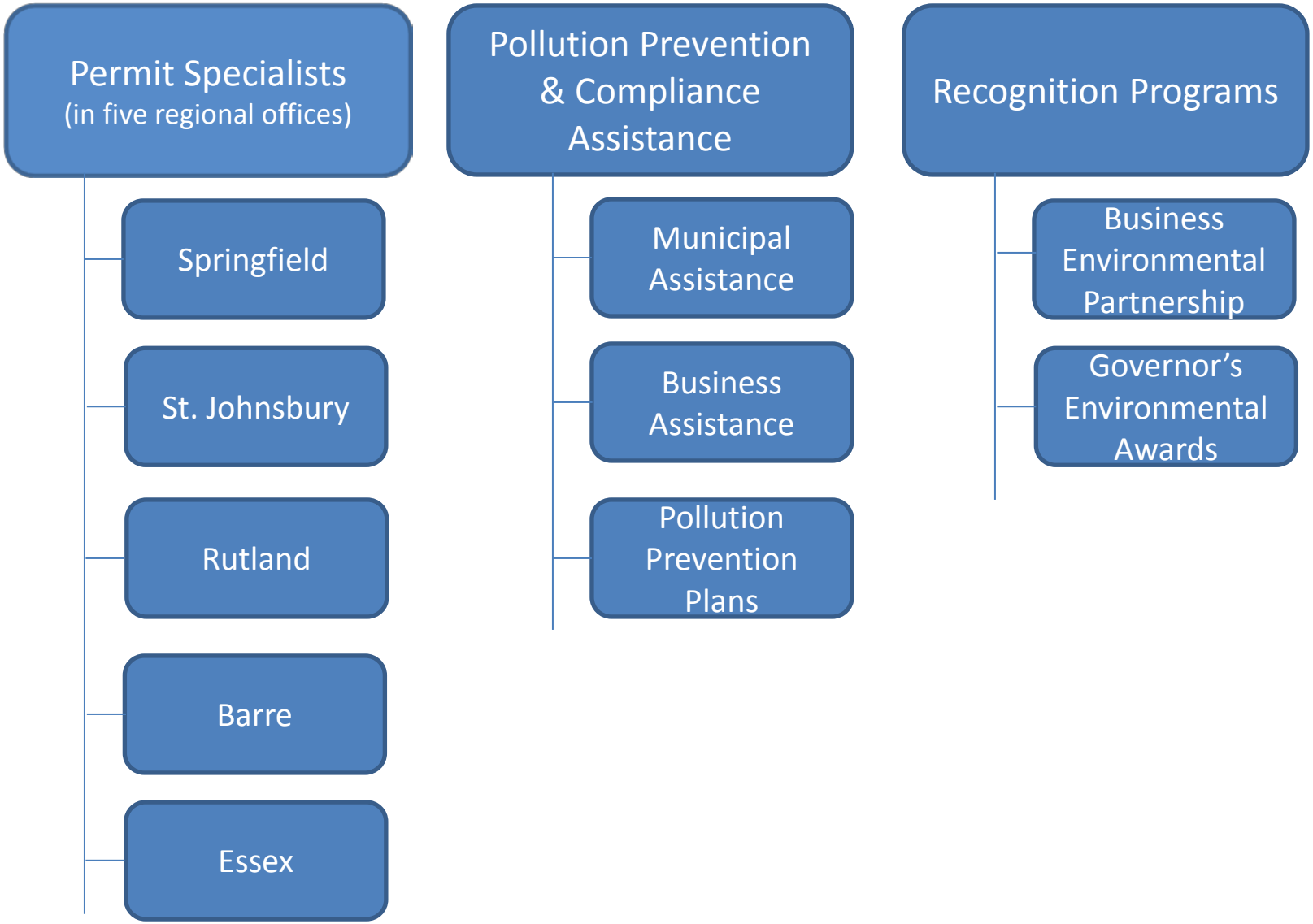
- Permit Specialists in ANR Regional Offices assist permit applicants to identify necessary state permits or approvals

- Staff provide on-site compliance and pollution prevention consultation to businesses and municipalities

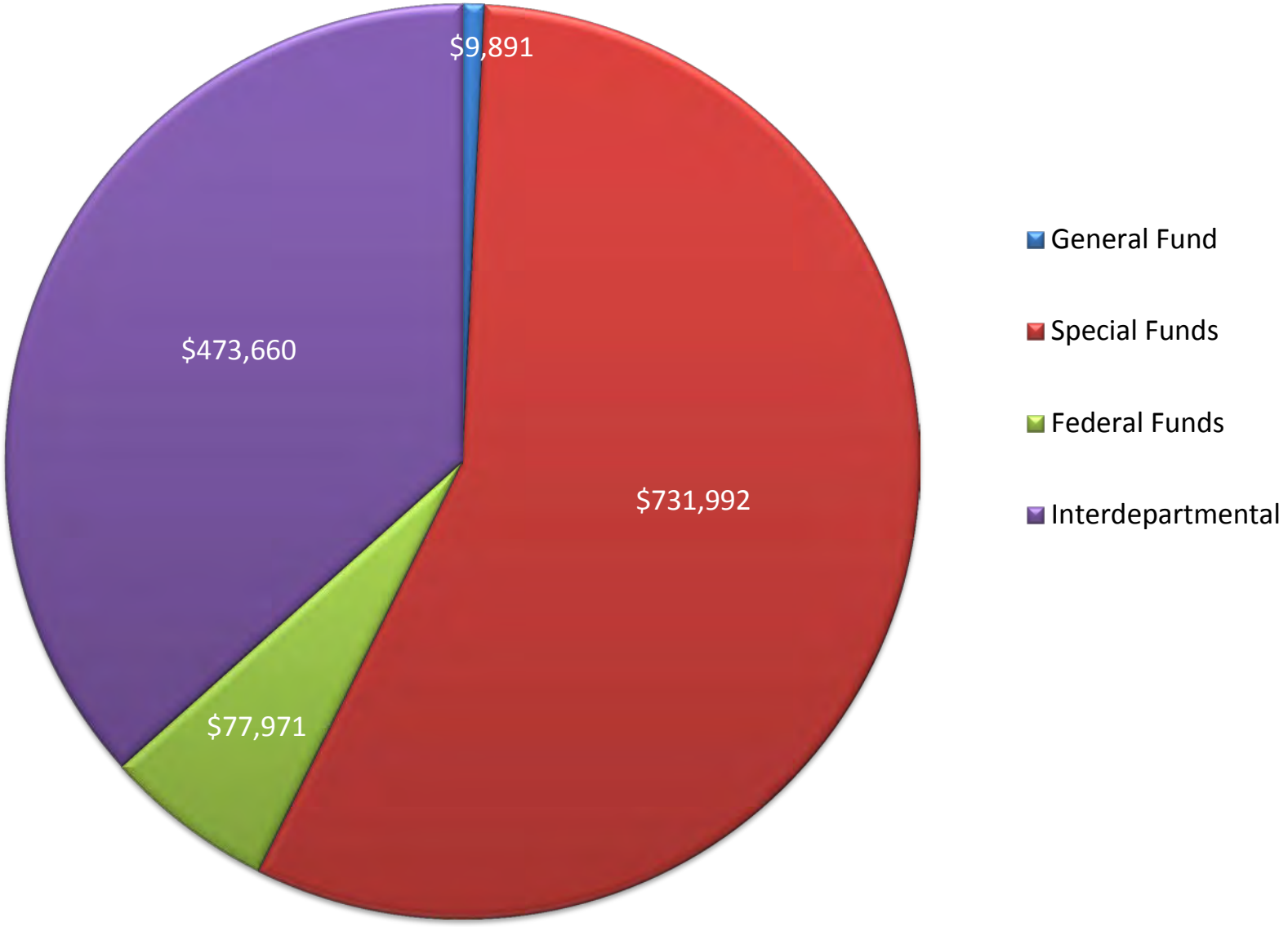
- Staff provide workshops and develop educational materials

- Recognition Programs
  - Annual Governor's Awards for Environmental Excellence – applications from businesses, non-profits, public agencies, and individuals
  - VT Business Environmental Partnership – Green Business Program. Green Hotels, Green Restaurants, Green Grocers, Clean Marinas, and others business sectors meet sustainability standards; over 200 participating businesses

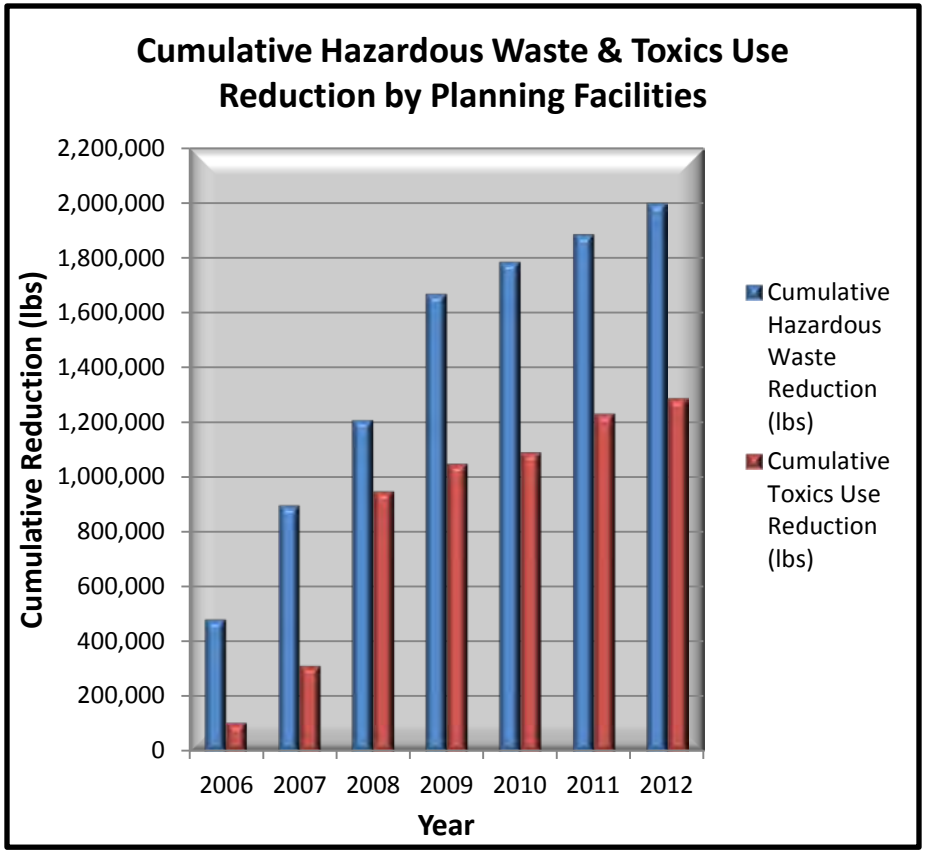
Organization Structure



DEC Environmental Assistance Division
FY2014 Budget By Major Funding Source



Pollution Prevention and Compliance Assistance



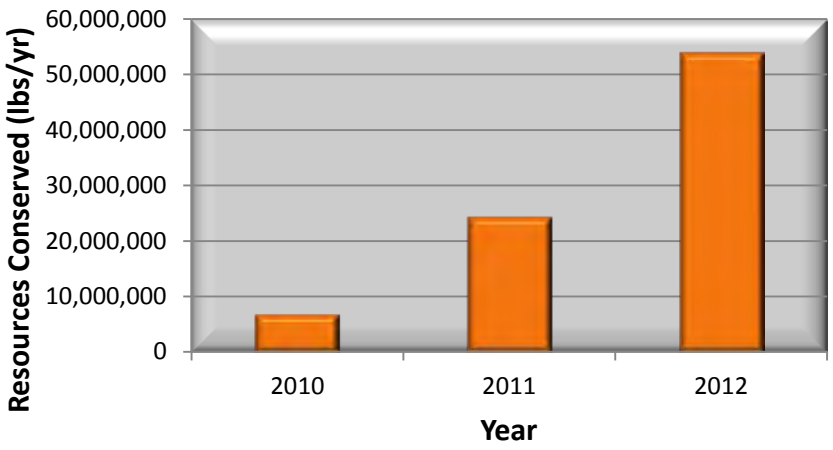
Pollution Prevention & Compliance Assistance Activity	Year
	2013
# of business/municipal workshops	8
# of workshop attendees	218
# of business on-site assistance visits	68
# of municipal on-site assistance visits	31

Permit Assistance

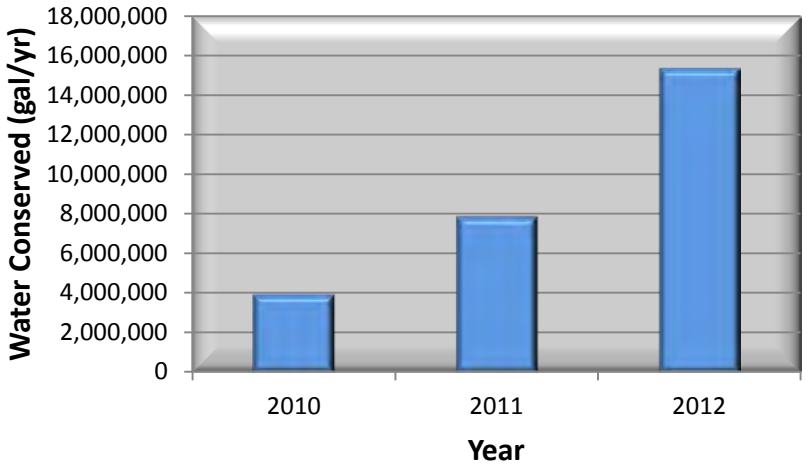
Permit Specialist Activity	Year	
	2012	2013
Project Reviews	2389	2184
Outreach Contacts (phone/email)	4927	4515
Town Visits	44	51

Vermont Business Environmental Partnership

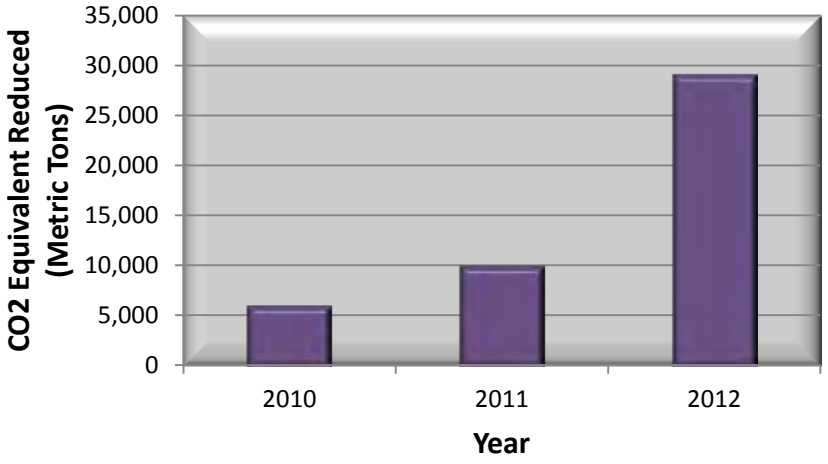
Cumulative Resources Conserved by Partners
(raw materials & waste reduction)



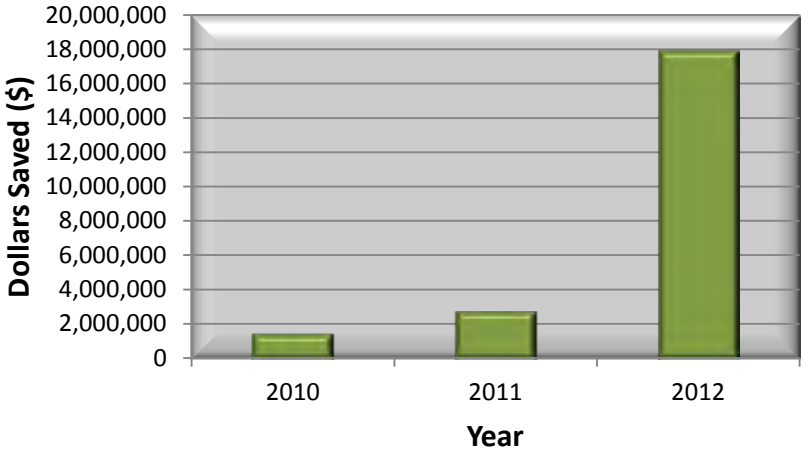
Cumulative Water Conserved by Partners



Cumulative Greenhouse Gases Reduced by Partners

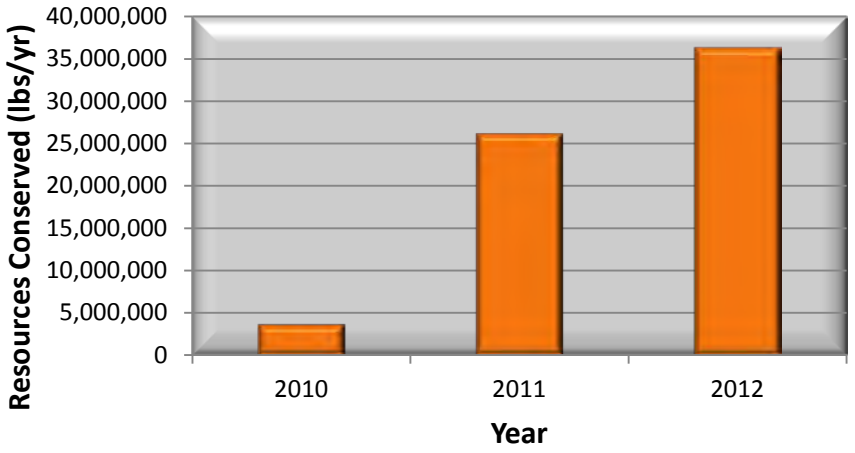


Cumulative Dollars Saved by Partners
From All Resources Conserved

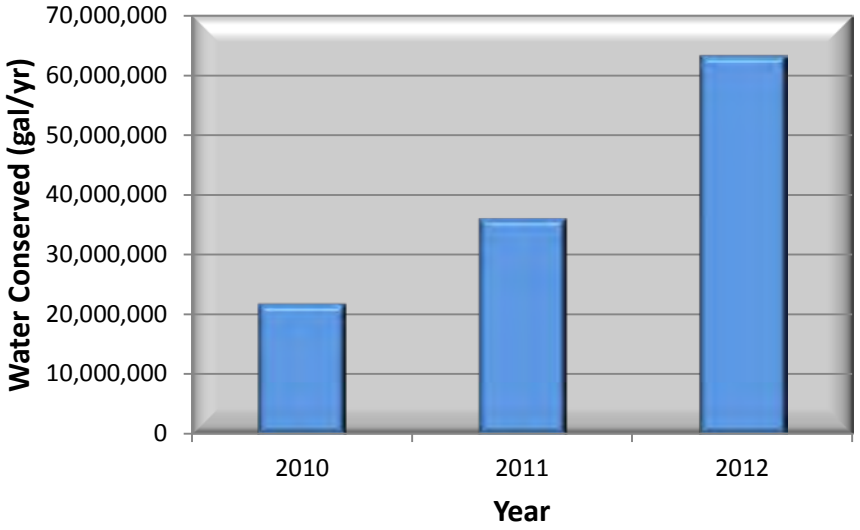


Governor's Environmental Excellence Awards

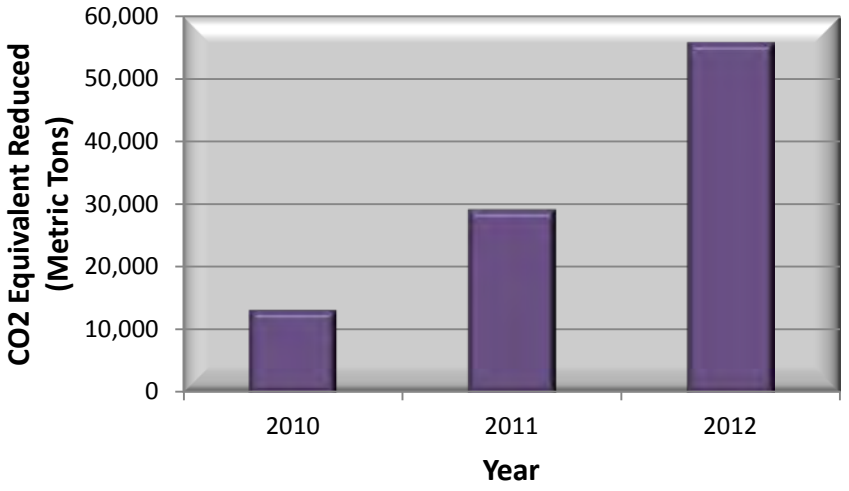
Cumulative Resources Conserved by Applicants
(raw materials & waste reduction)



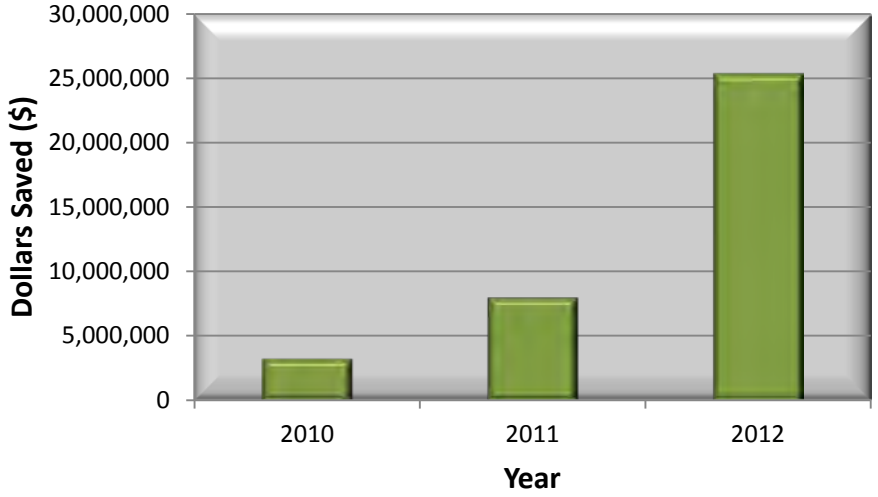
Cumulative Water Conserved by Applicants



Cumulative Greenhouse Gases Reduced by Applicants



Cumulative Dollars Saved by Applicants
From All Resources Conserved



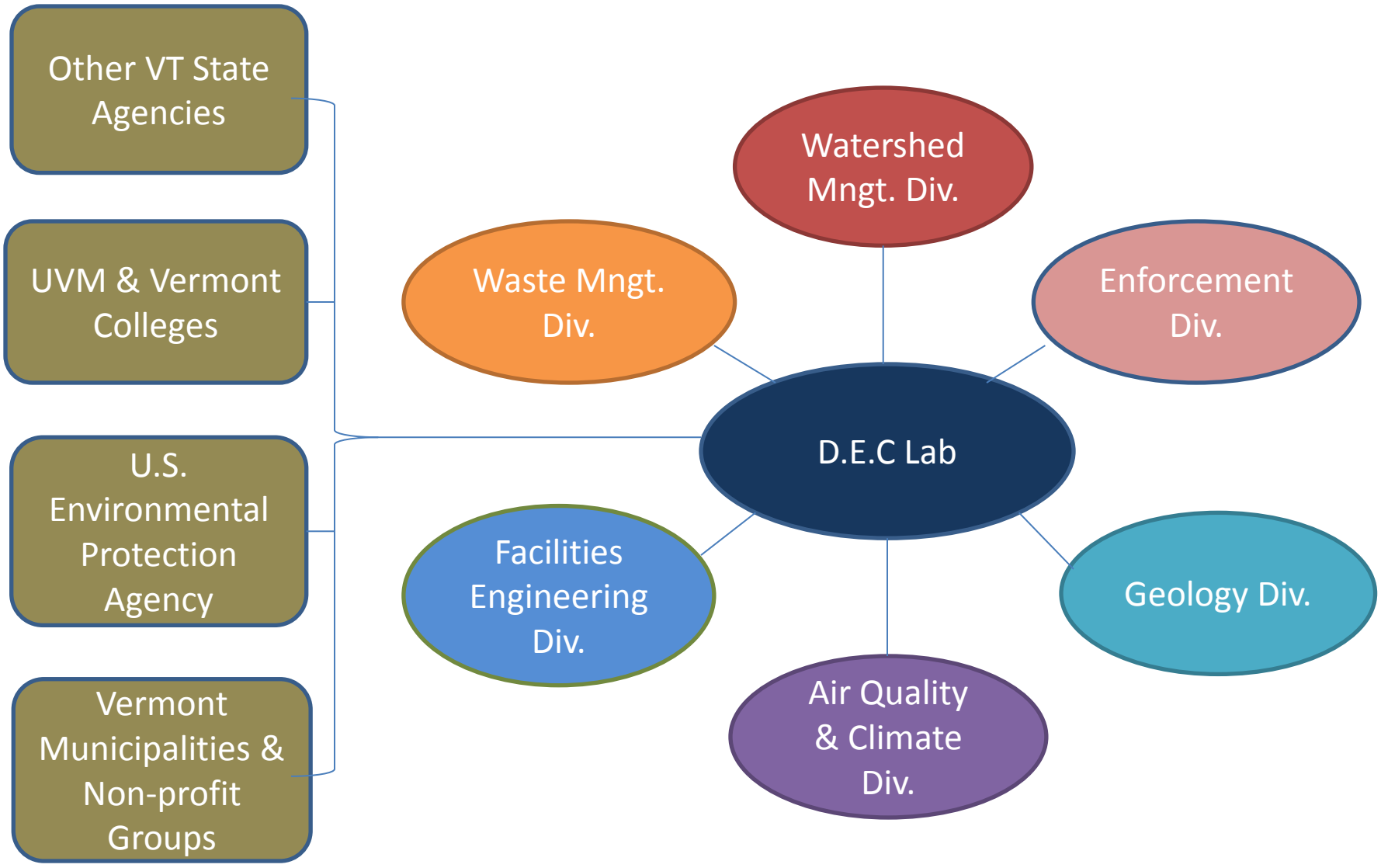
DEC (LaRosa) Laboratory

2015 Performance Measures

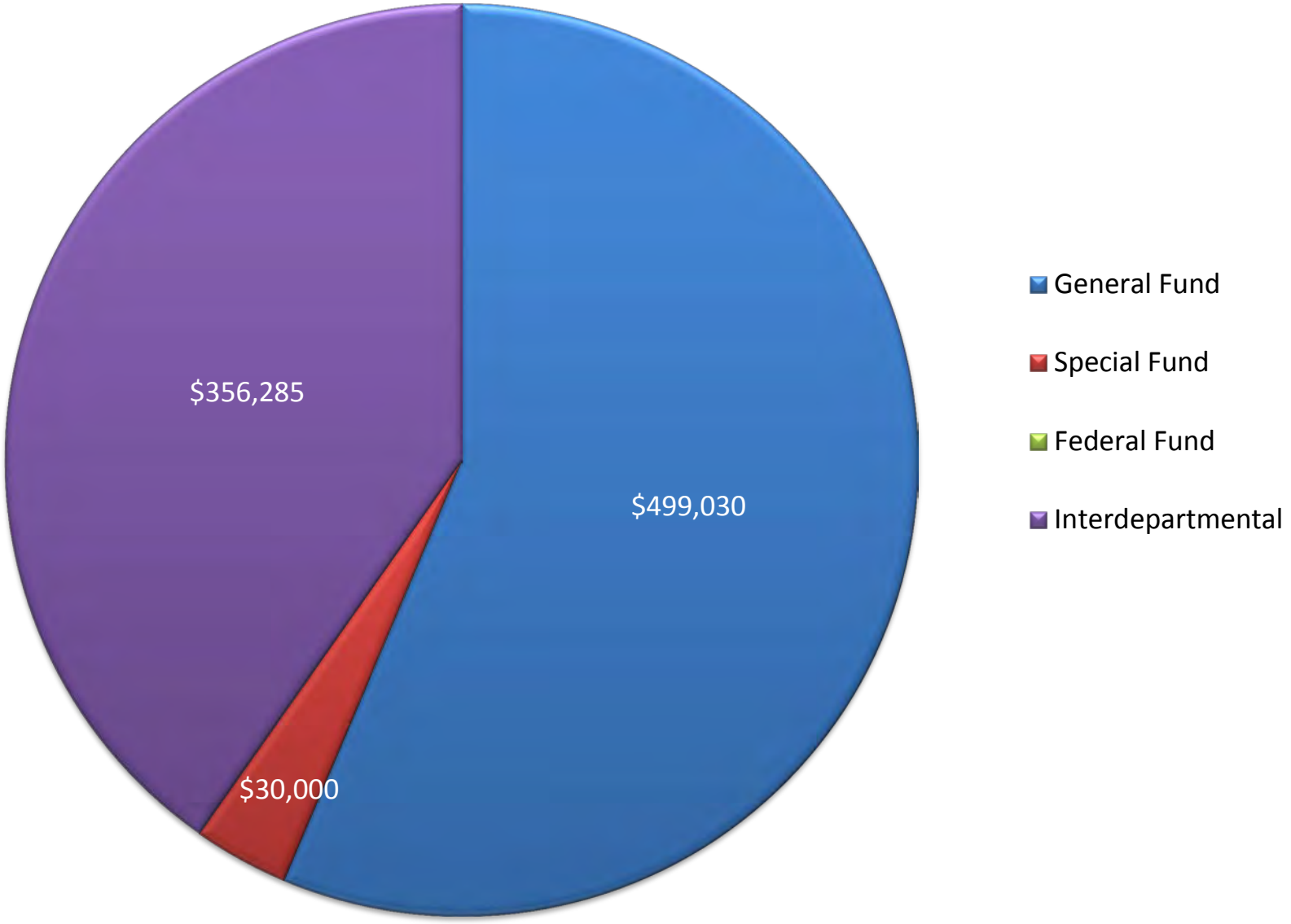
Laboratory Mission

To provide high-quality analytical data to DEC programs, other state agencies and non-profits, in support of critical policy goals; while providing in-kind services to numerous citizen groups, further supporting DEC's core mission.

DEC Lab Customers



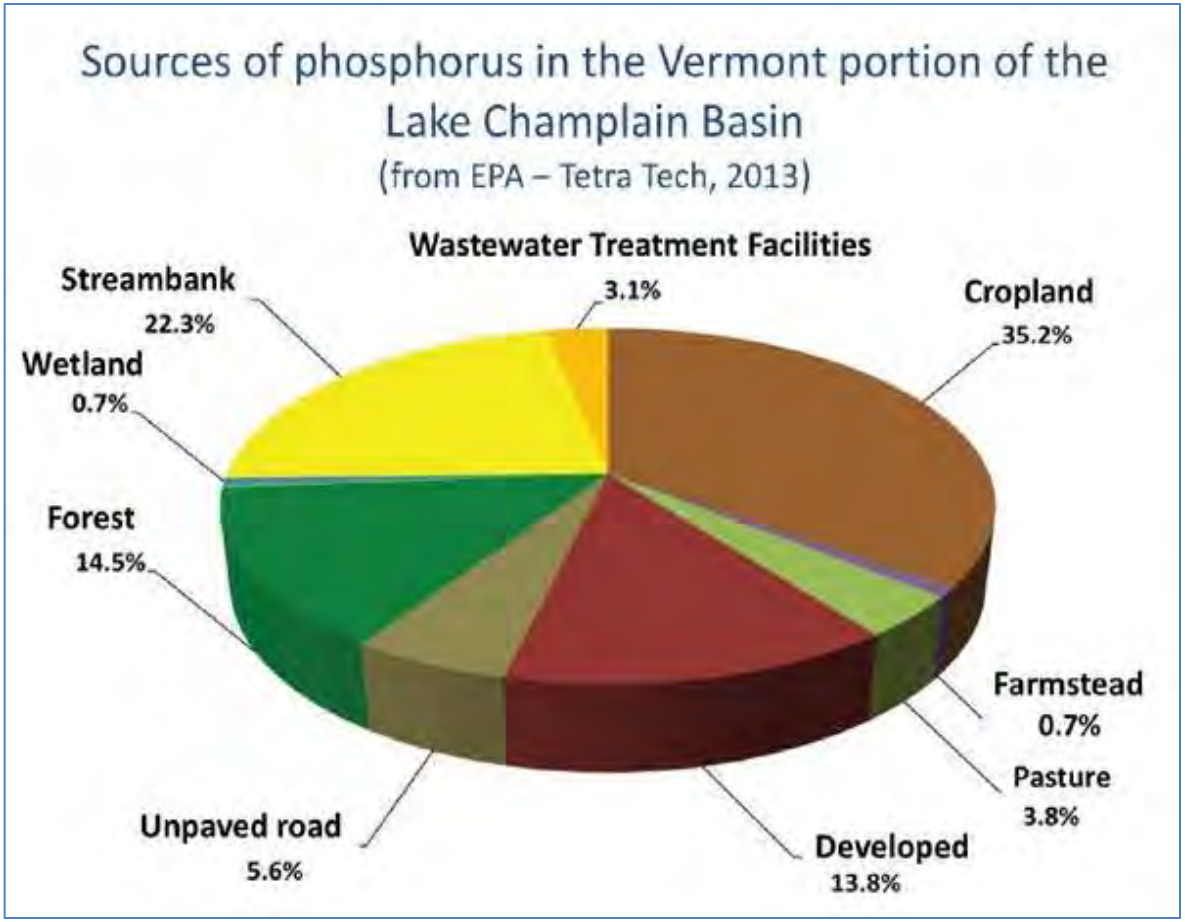
DEC Laboratory
FY14 Budget By Major Funding Source



The DEC Lab's unique low detection limit is critical to phosphorus monitoring.

Very small increases in concentration lead to accelerated plant growth, low oxygen levels, threatening of aquatic species and otherwise degrades stream and lake health.

Sound Laboratory data spans 30+ years.

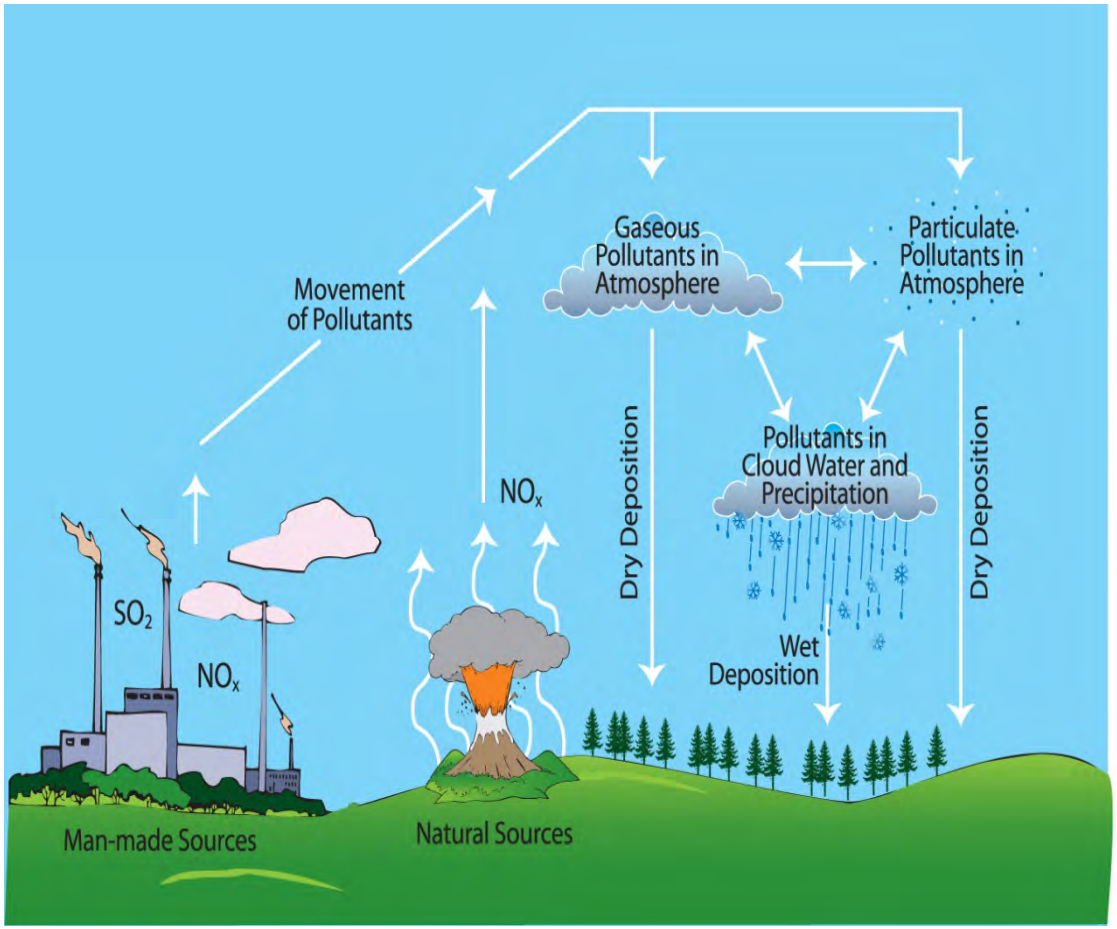


Specialized Laboratory Analyses

Vt. Air Toxics monitoring station samples are analyzed by the laboratory and used to track trends in ambient levels of air toxic pollutants regulated under the Clean Air Act.

Toxic pollutants are associated a wide variety of adverse health effects, including cancer and neurological effects.

Consistent high-quality Lab data (Acid Lakes Program) confirms reductions in air pollution, and improvements to northeast water quality.

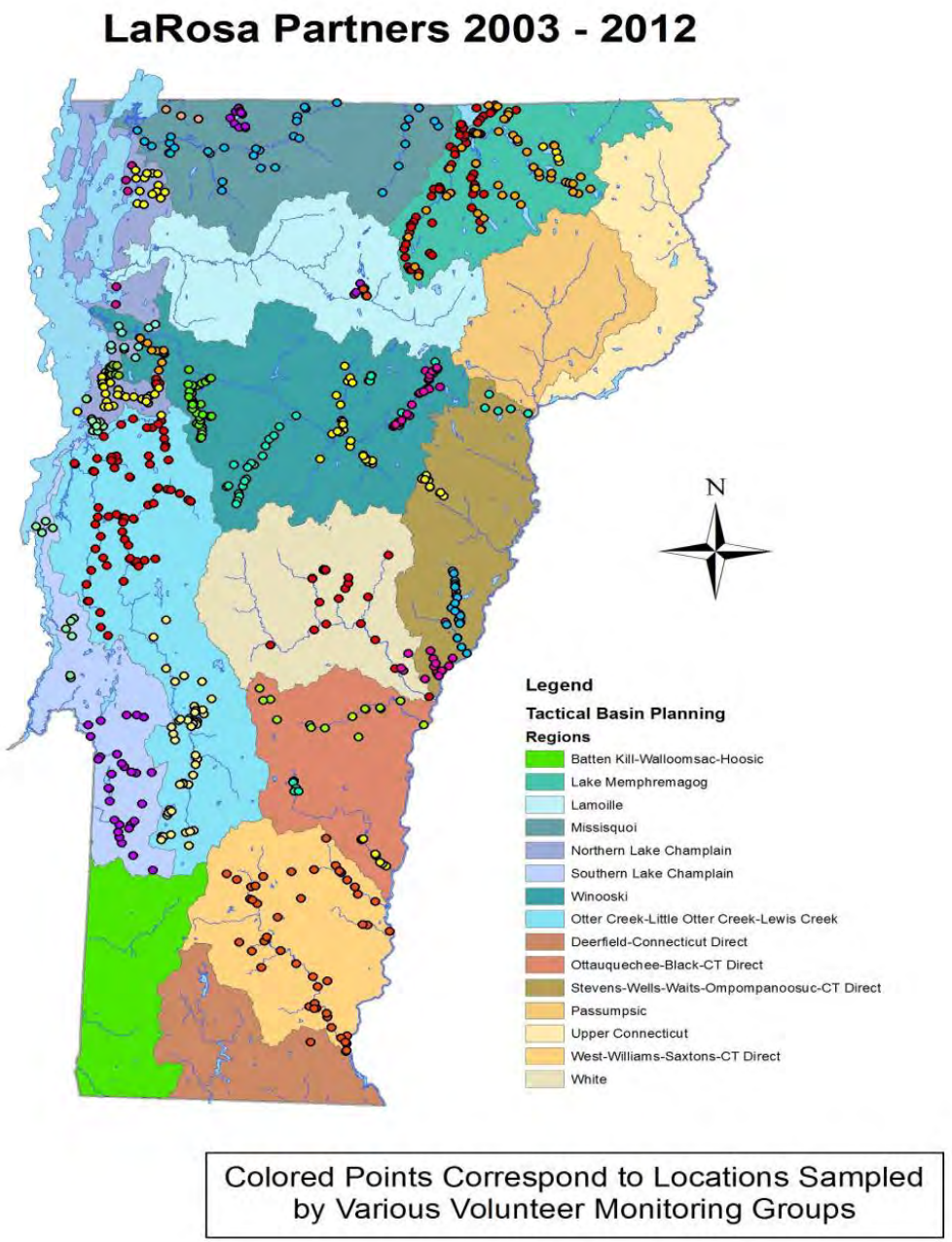


Education & Outreach

The LaRosa Analytical Services Grant (LaRosa Partnership) is a partnership between some of Vermont's volunteer (citizen) watershed groups, the Vt. DEC – Monitoring, Assessment and Planning Program and the DEC Laboratory. The Laboratory provides analysis at no cost.

This program is organized and coordinated to complement the Vermont DEC staff sampling, effectively furthering Watershed Management Division's primary mission to protect, maintain, enhance and restore the quality of Vermont's surface water resources.

Sometimes, local groups are able to discover, monitor and resolve some issues more effectively within their communities, than the State.



DEC Annual Analyses

- Nearly 25,000 tests analyzed annually with a throughput value of $600,000.
- More than 9,000 nutrient tests processed, valued at $220,000, to monitor the quality of Vermont's ground & surface waters.
- The LaRosa Partnership, Citizen Watershed Groups, amounts to nearly 6,000 tests annually with a throughput value of almost $90,000.

Compliance & Enforcement Division

2015 Performance Measures

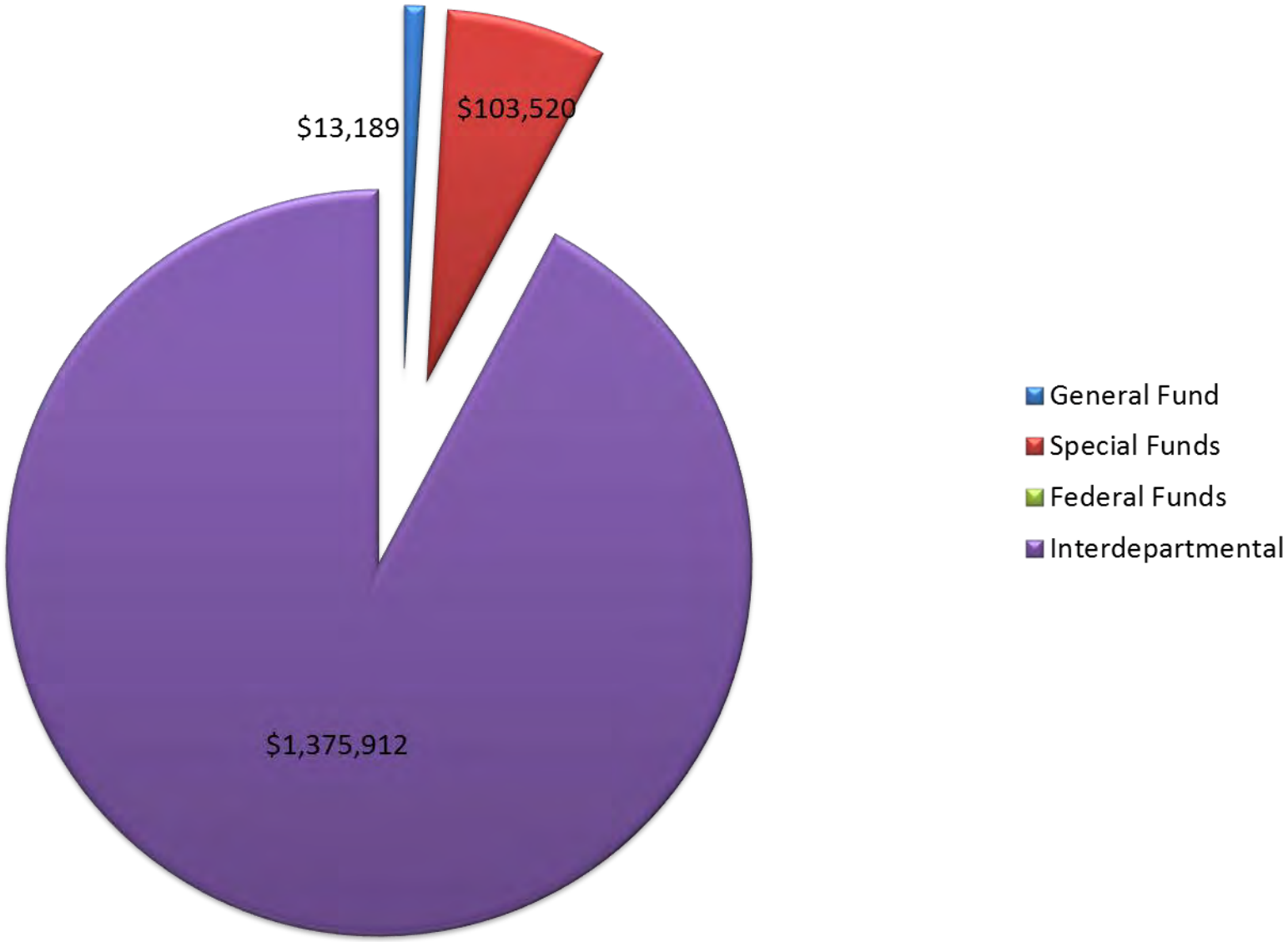
CED's Mission

Investigation and prosecution of environmental violations to protect the health and well-being of Vermont's citizens and our environment.

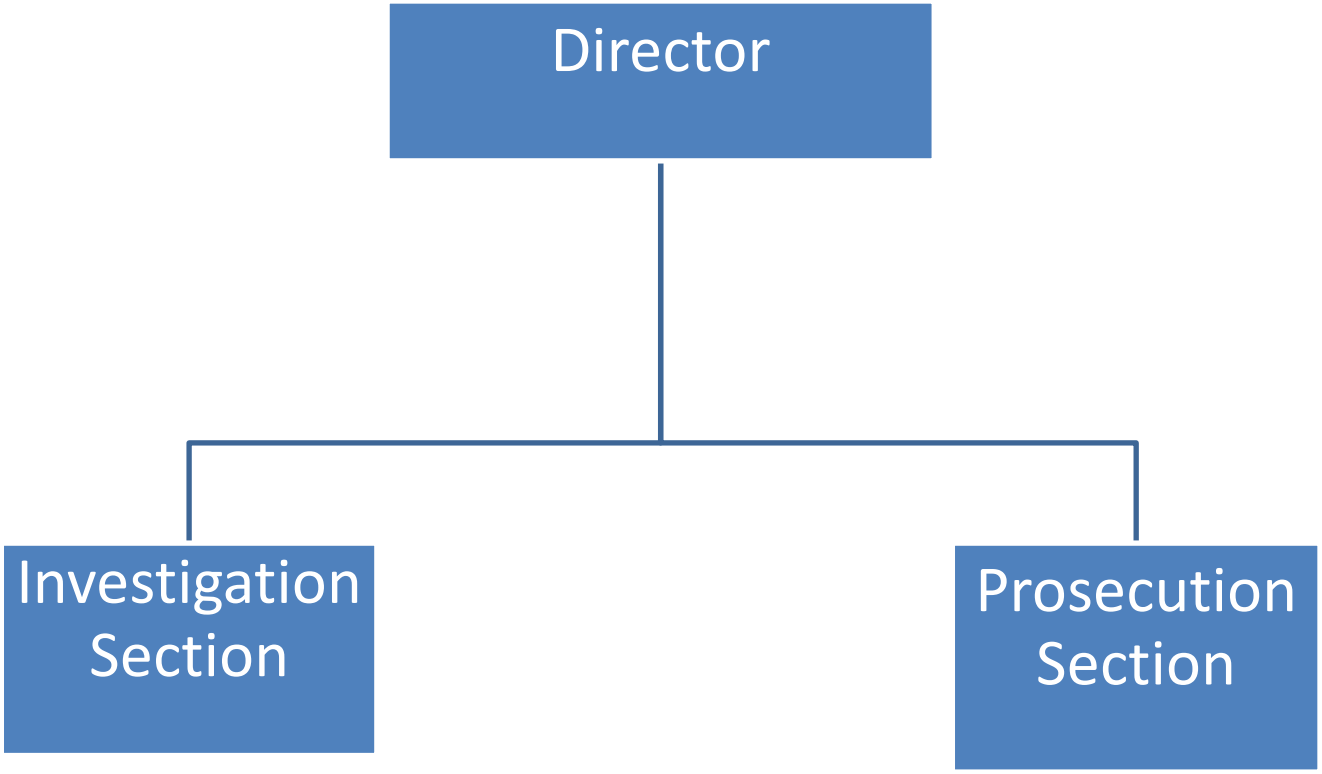
Description of Our Work

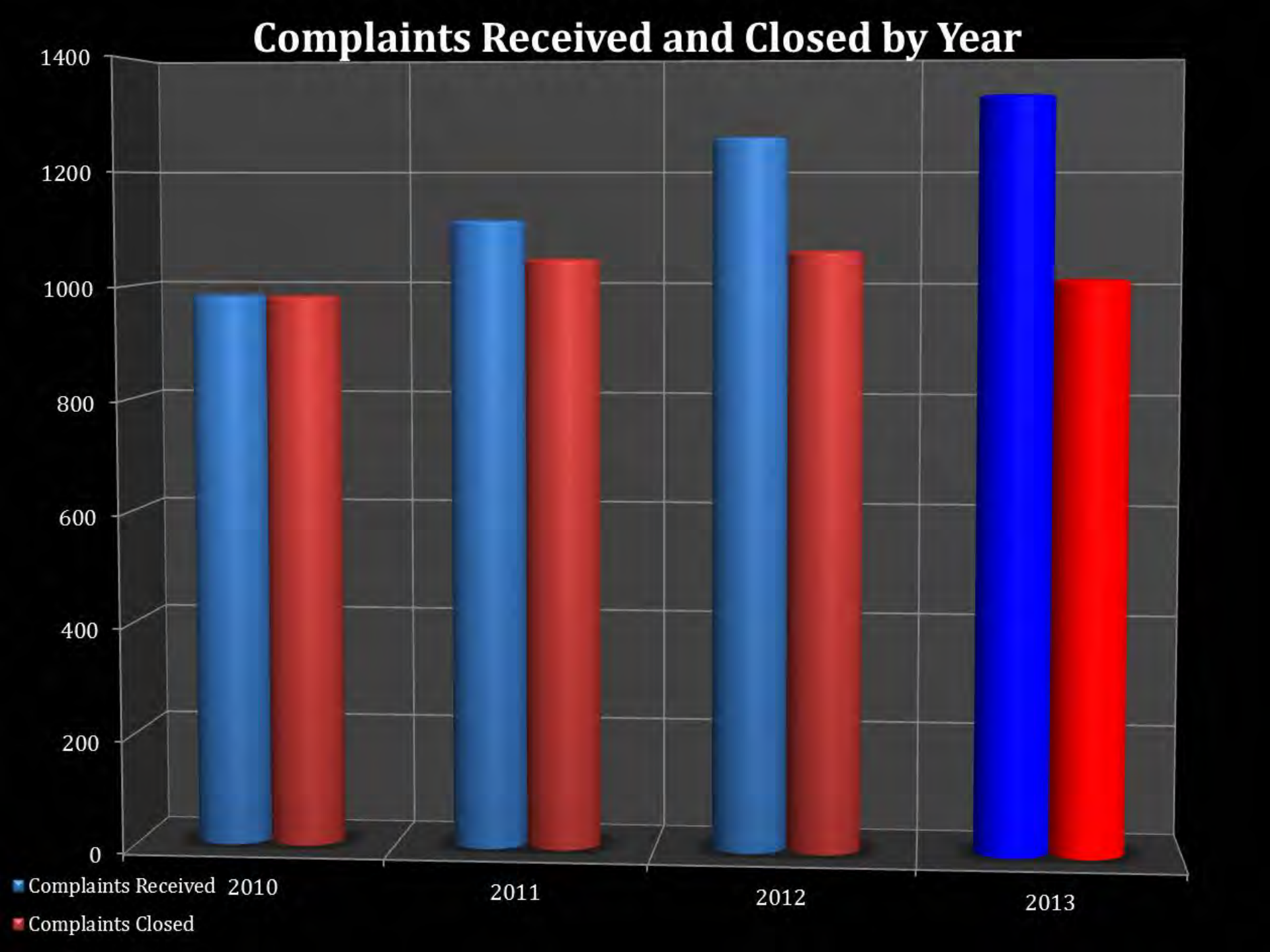
- Investigate citizen complaints.
- Prosecute environmental violations with the goal of environmental remediation and fair and consistent penalties.
- Coordinate with state and federal colleagues.
- Work strategically with our partners to further our mission.

DEC Compliance & Enforcement Division
FY14 Budget "As Passed" By Major Funding Source

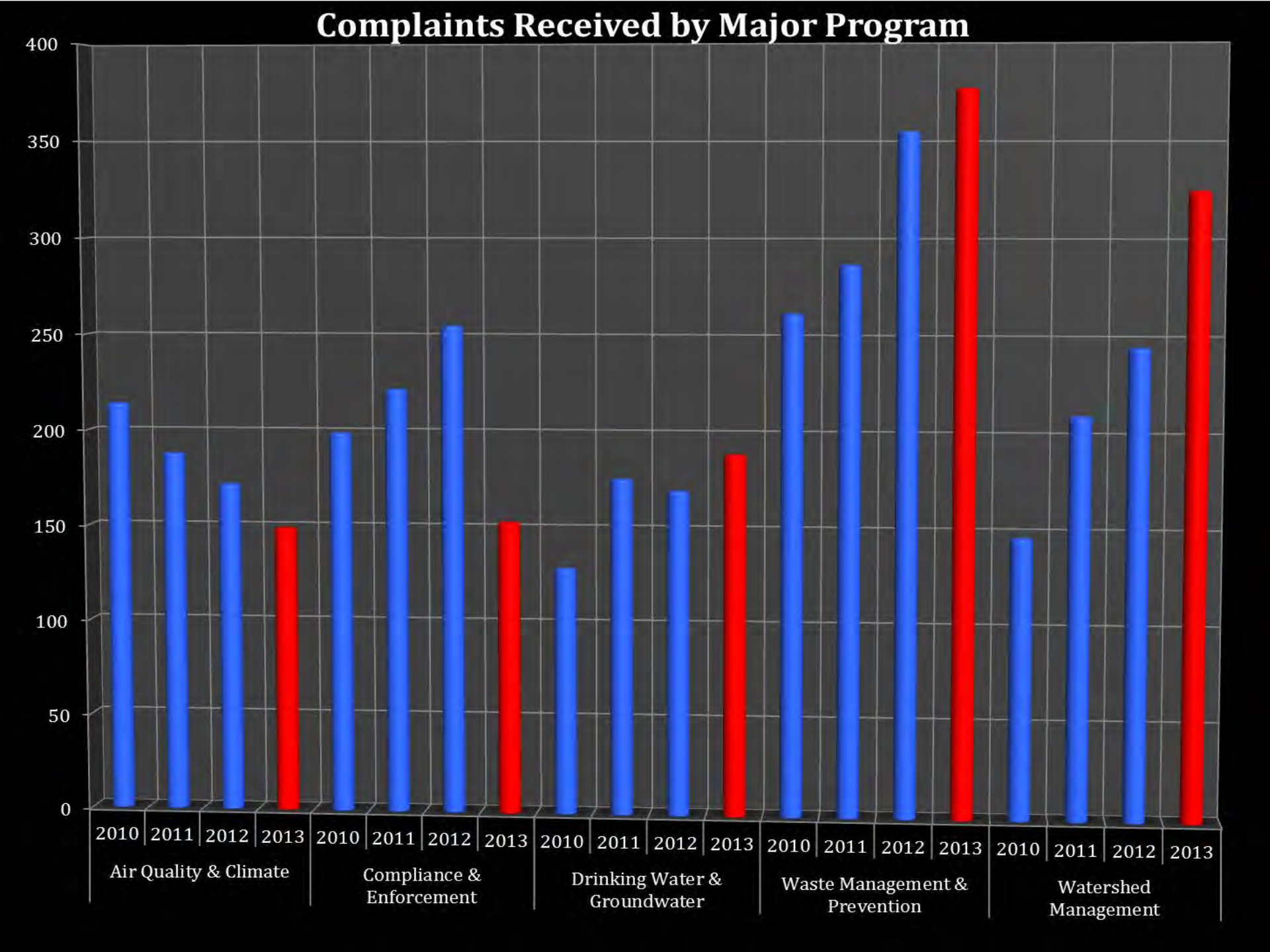


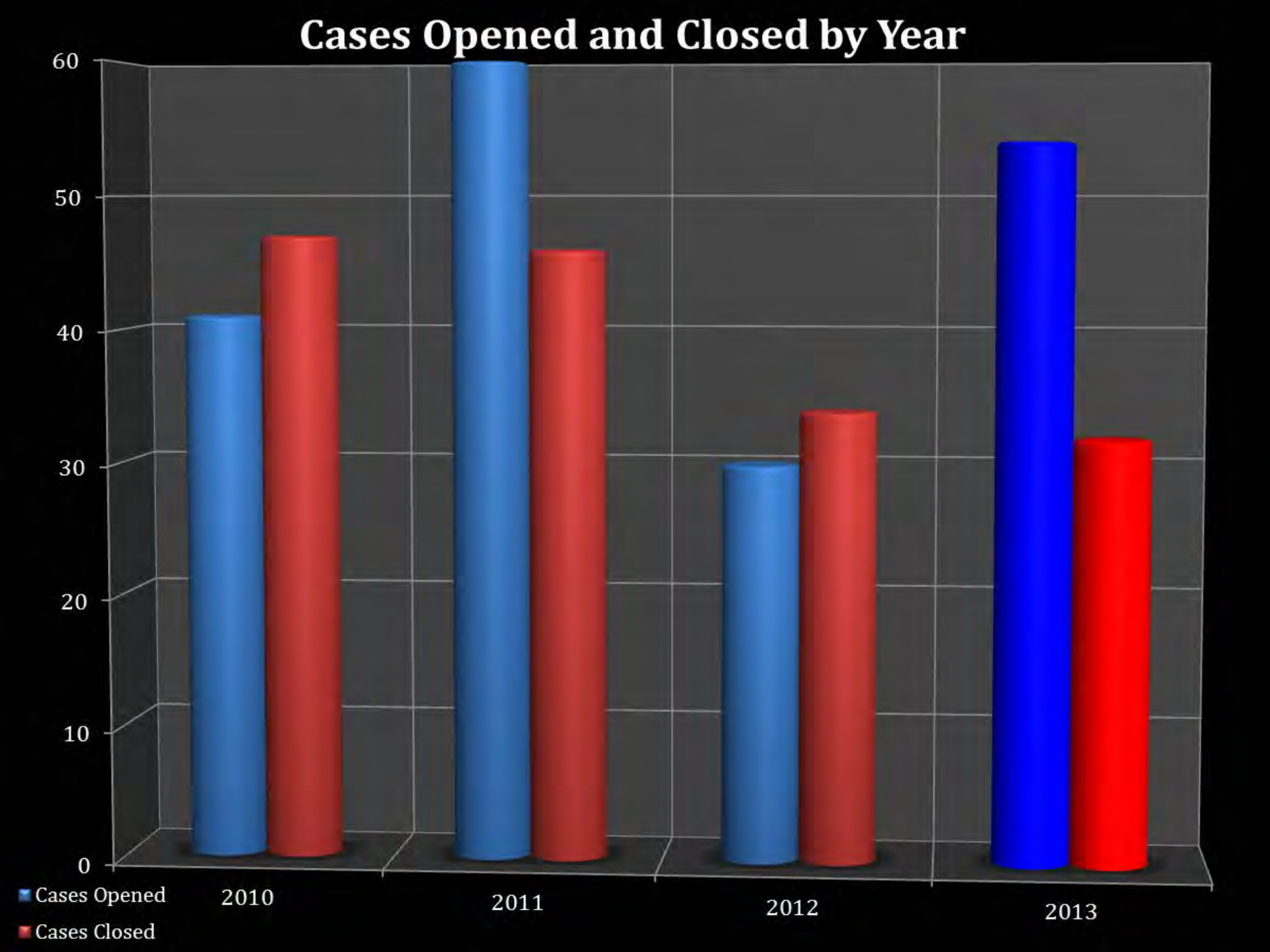
Compliance and Enforcement Division



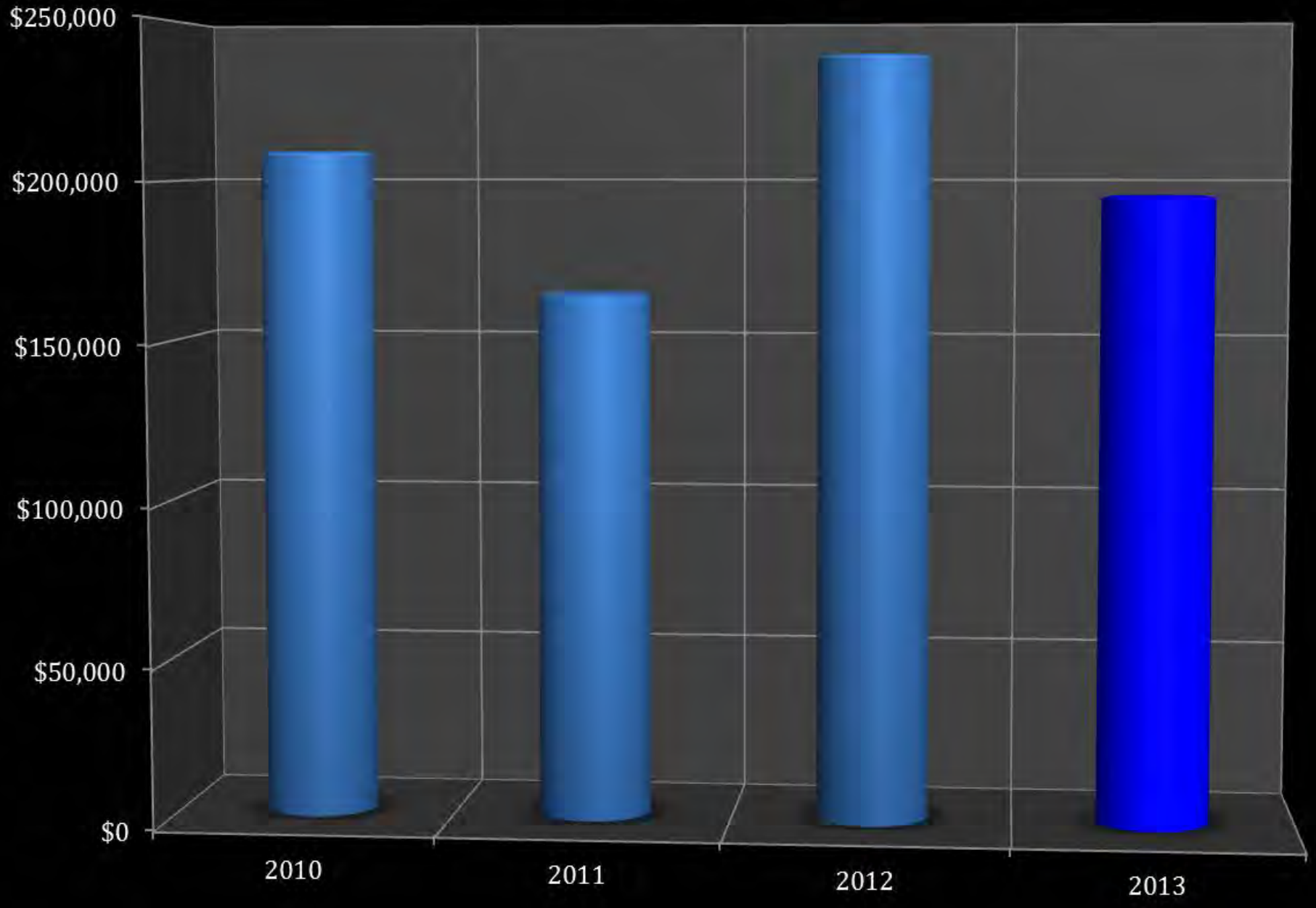

Complaints Received and Closed by Year
1400
1200
1000
800
600
400
200
0
2010
2011
2012
2013
Complaints Received
Complaints Closed

Complaints Received by Major Program




Cases Opened and Closed by Year
60
50
40
30
20
10
0
2010
2011
2012
2013
Cases Opened
Cases Closed

Penalties Assessed by Year



What Our Complaints & Cases Look Like

Open Trash Burning

Logging activities– Discharge to State Waters

Logging Slash Filling a Brook

Bunker Oil Spill

Failed Septic System

Unpermitted Gravel Excavation

Hazardous Waste Spill

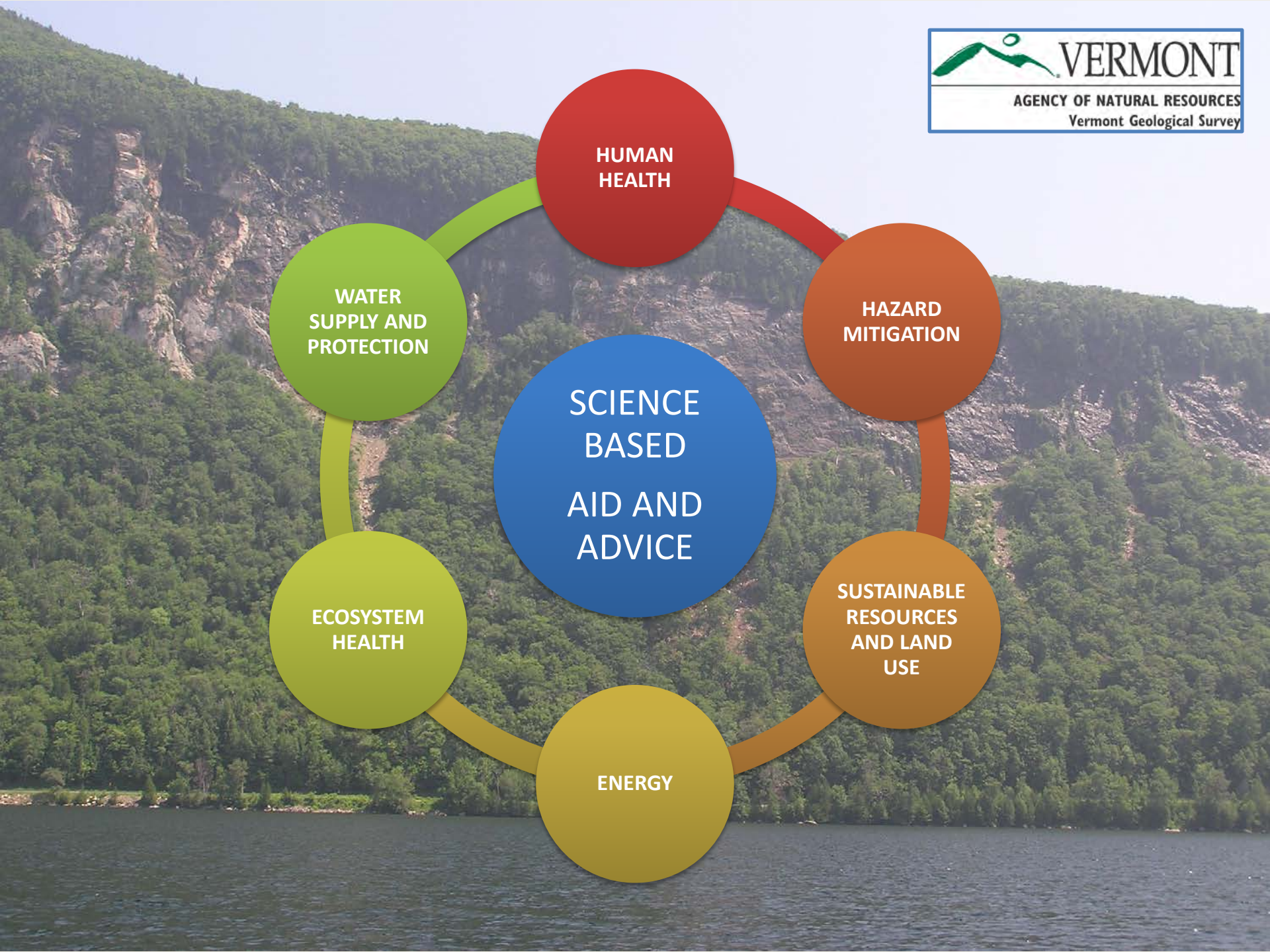
Diesel Spill

Oil Discharge to State Waters

Geology Division

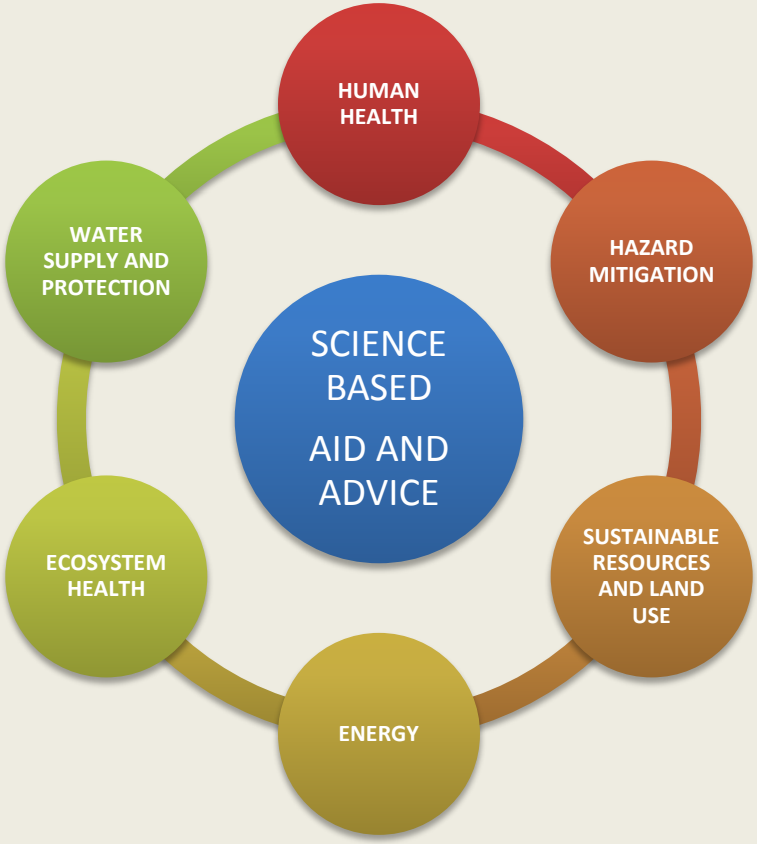
[Vermont Geological Survey]

2015 Performance Measures


VERMONT
AGENCY OF NATURAL RESOURCES
Vermont Geological Survey
HUMAN HEALTH
HAZARD MITIGATION
SUSTAINABLE RESOURCES AND LAND USE
ENERGY
ECOSYSTEM HEALTH
WATER SUPPLY AND PROTECTION
SCIENCE BASED
AID AND ADVICE

Division Mission

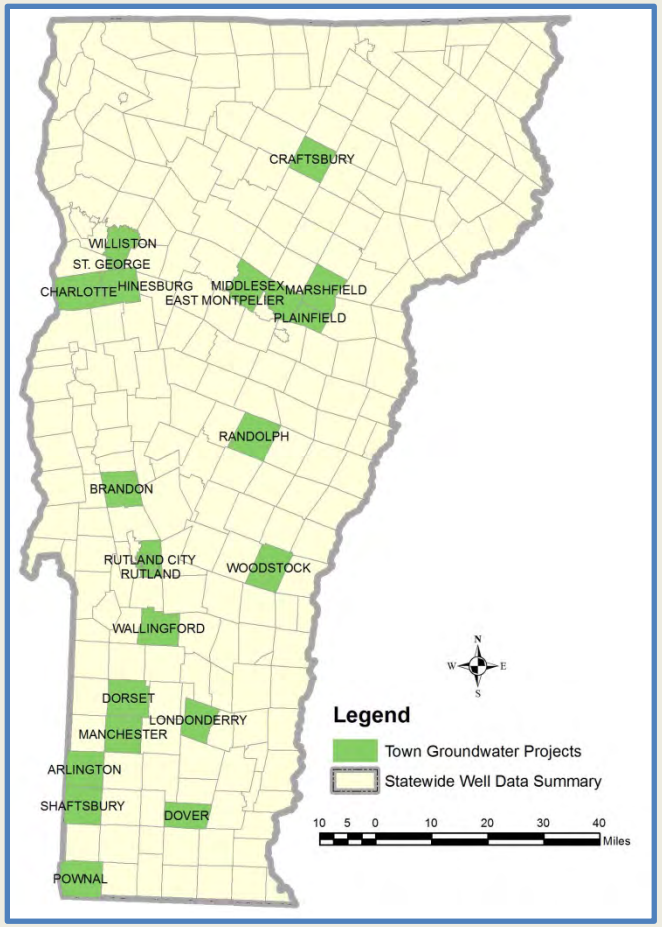
- As per statute, the Geology Division provides aid and advice and conducts surveys and research of the geology, mineral resources and topography of the State.



Science-based analyses address a full range of environmental issues.

Description of Work

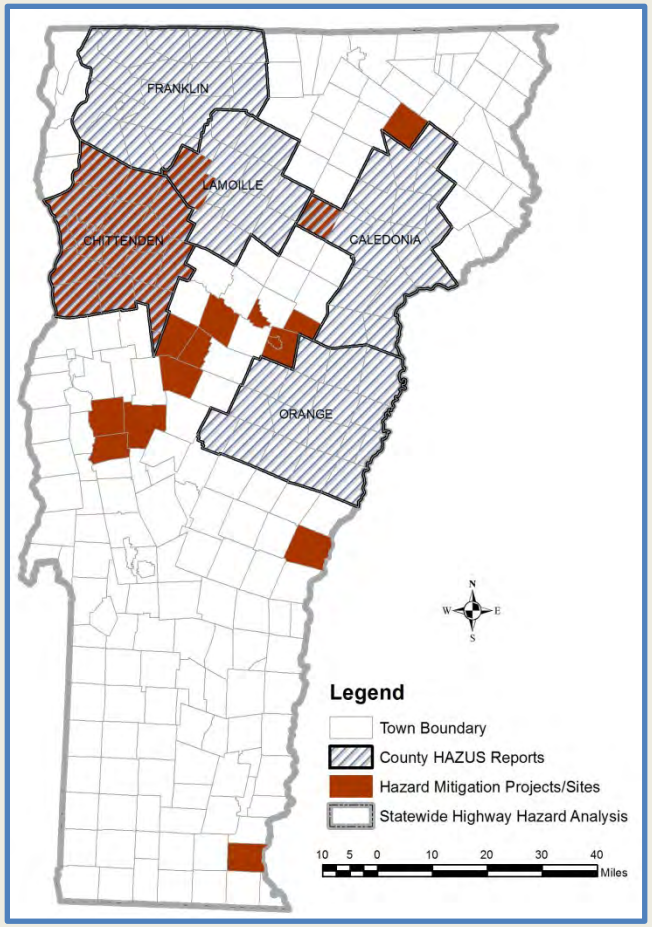
- Bedrock and surficial geologic mapping
- Digital data products
- Water and earth materials chemistry
- Applied studies address:
  - aquifer identification
  - groundwater resource protection and contamination analyses
  - naturally occurring contaminants such as radionuclides and arsenic
  - geothermal energy
  - landslide hazard maps
  - defining earthquake risk for critical facilities
  - land use issues such as forest health



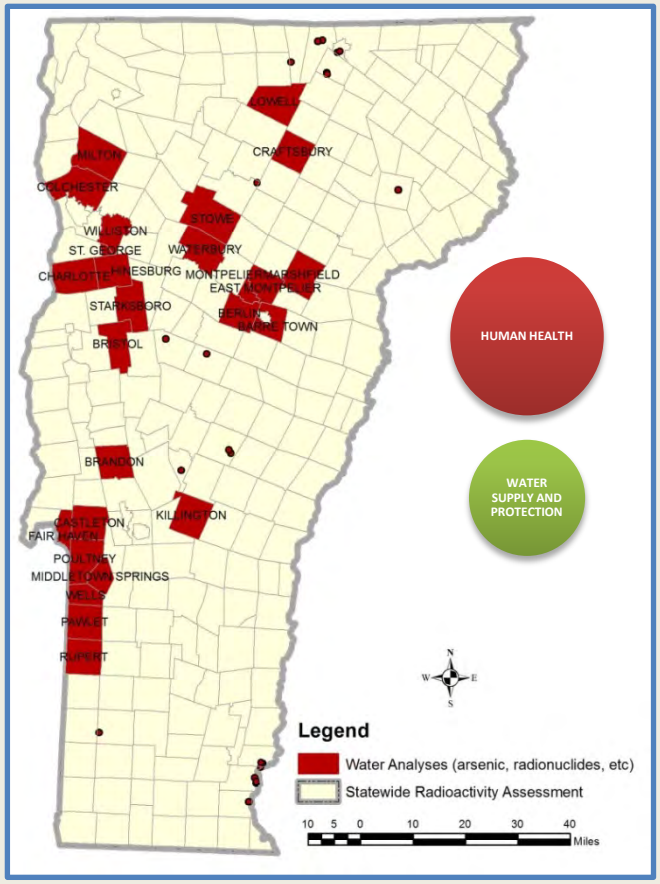
Map shows projects related to Groundwater Resources

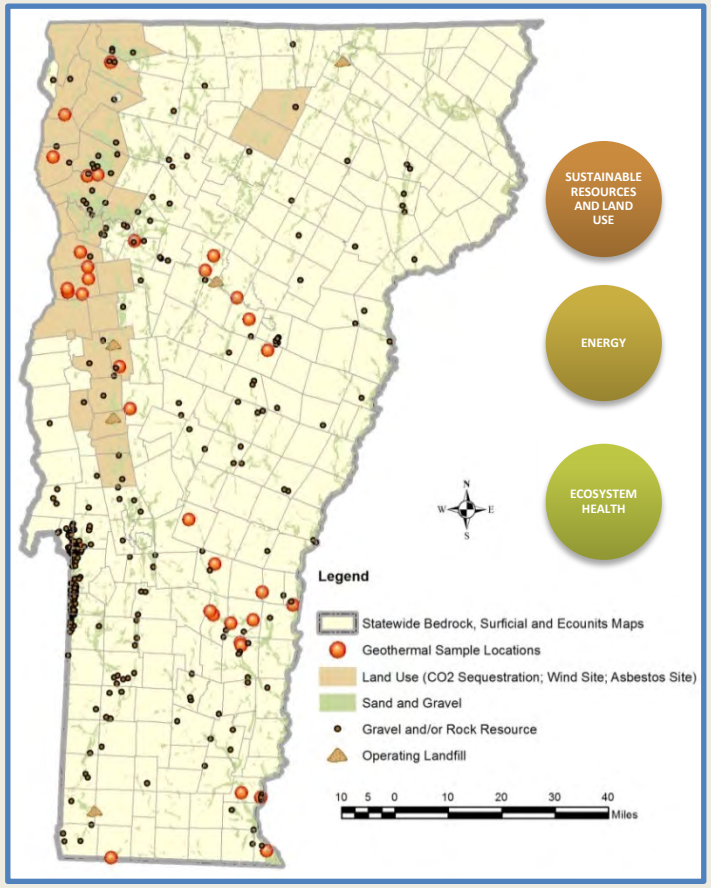
SCIENCE BASED

AID AND ADVICE



Map shows projects related to Hazards





Map shows projects related to:
Human Health
Water Quality (ex. Arsenic)
Radioactivity
Mineral Dust

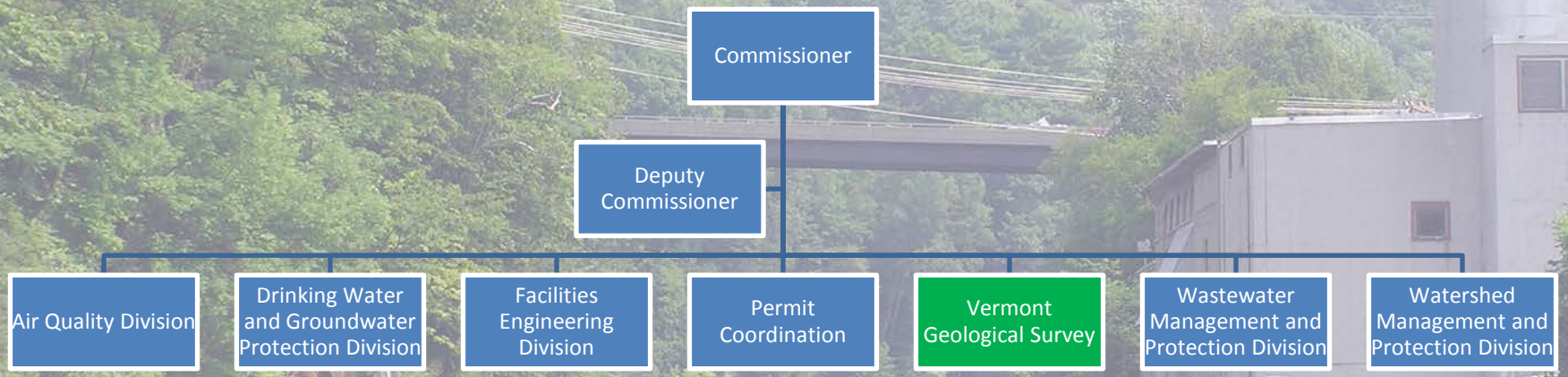
SCIENCE BASED

AID AND ADVICE

Map shows projects related to:
Geothermal Energy
Land Use & Act 250
Geochemical Landscape
Sustainable Materials

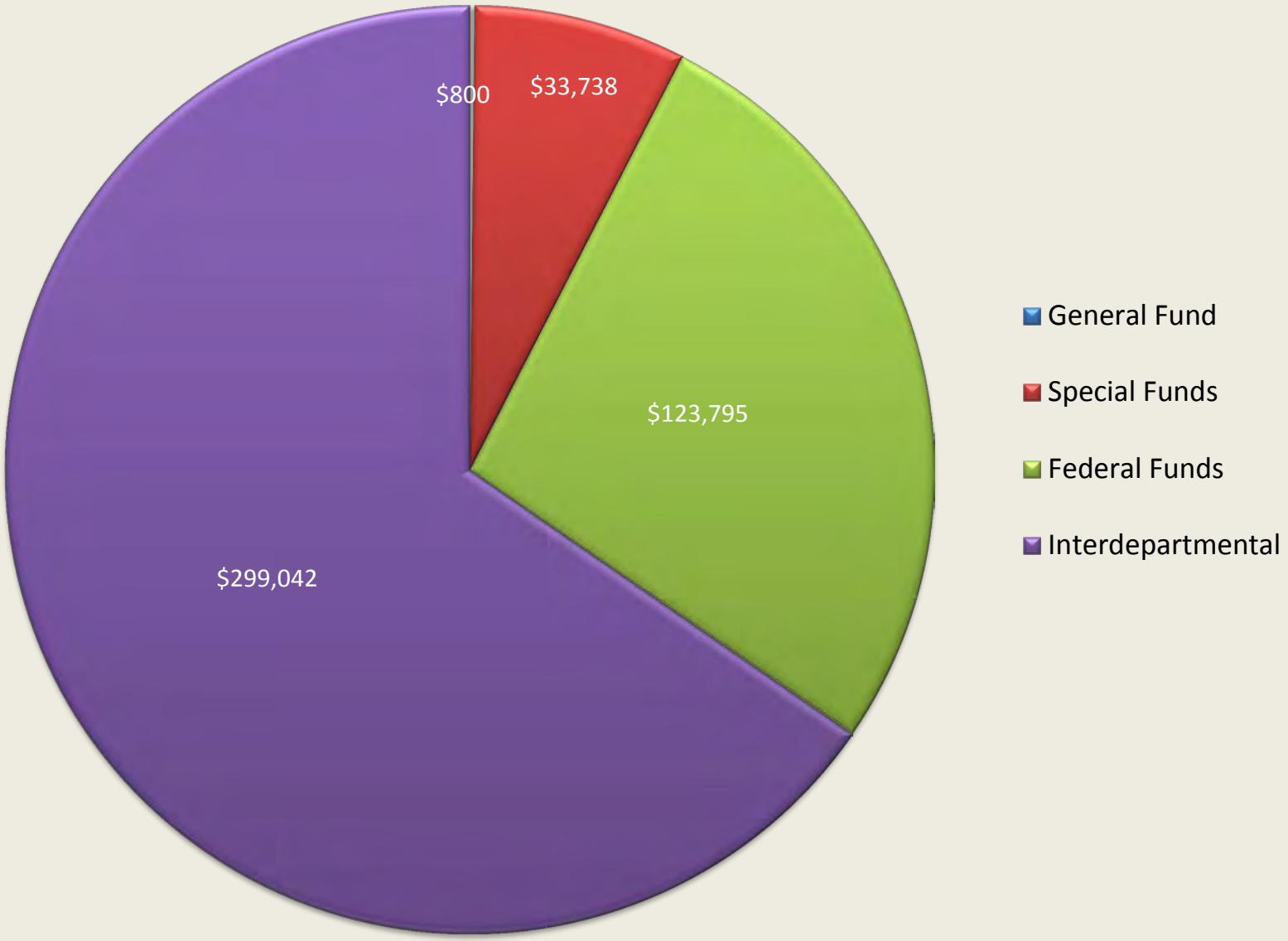
VERMONT GEOLOGICAL SURVEY/GEOLOGY DIVISION

Organization Structure



By statute, the State Geologist directs the Division. The Division employs two other full time geologists and conducts work in cooperation with academic institutions, government agencies and contractors.

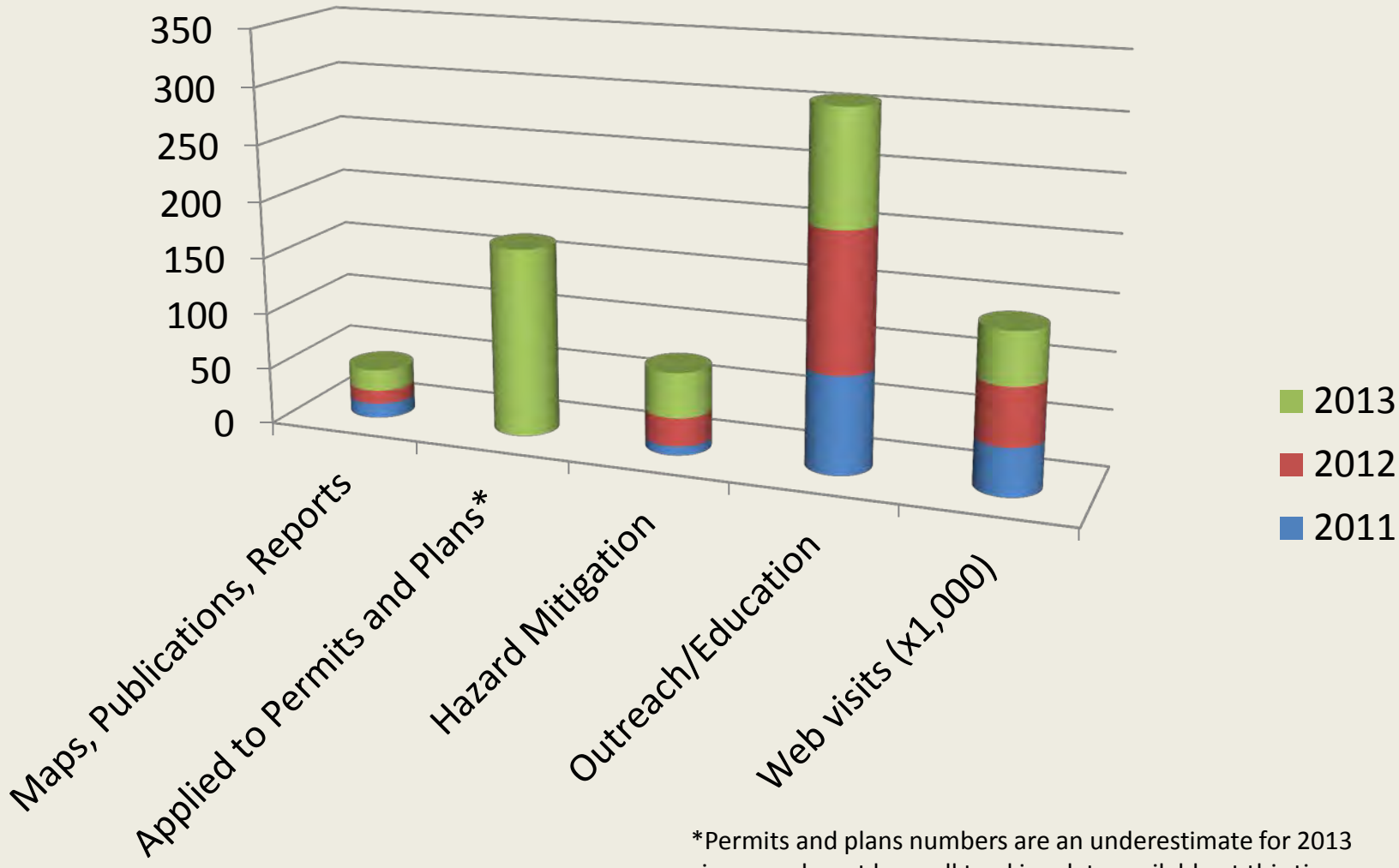
DEC Geology Division
FY14 Budget By Major Funding Source



Highlighted Performance Measures

- Maps, Publications, Reports, Datasets
- Geoscience Applied to Permits and Plans
- Hazard Mitigation
- Public Outreach and Education
- Web visits

Geology Division Performance Measures



*Permits and plans numbers are an underestimate for 2013 since we do not have all tracking data available at this time.

Highlighted Performance Measures

- **Maps, Publications, Reports, Datasets**

  Maps produced and/or posted on-line

  Publications - papers, abstracts

  Reports completed

  Datasets produced, revised and made available to the public

- **Geoscience Applied to Permits and Plans:**

  Hazardous sites remediation plans

  Public Water Supply Source Protection Areas (SWPA) defined or revised

  Public Water Supply Well permits issued

  Underground Injection Control Permits Issued

  Indirect Discharge Permits issued

  Stream Geomorphic Assessments, Phases 1, 2, 3

  Act 250 applications - Criteria 9D and 9E

(continued on next page)

Highlighted Performance Measures

- **Hazard Mitigation**
  - Site visits
  - HAZUS (computer-based risk assessment) projects run
  - Reports submitted

- **Public Outreach and Education**
  - Presentations for towns, organizations, colleges/schools, libraries, government
  - Information requests
  - Presentations at professional meetings
  - Student Interns trained

- **Web visits**